Soil Management Status Report Soil Testing to Refine Polygons in Western Landbay Former ARC Facility

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# SCS ENGINEERS

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## 1 EXECUTIVE SUMMARY

This Soil Management Status Report (SMSR) was prepared for Gainesville Associates, and addresses soils contaminated with perchlorate or polychlorinated biphenyls (PCBs) in the Western Landbay of the ARC Site. The SMSR describes collection of supplemental soil samples for perchlorate analysis to refine sub-polygons following the methods of Integral (2016). In addition, it describes collection of supplemental soil samples for polychlorinated biphenyls (PCB) analysis in locations not sampled by prior investigators to both refine existing sub-polygons and to identify any new sub-polygons that should be addressed under the Soil Management Plan (SMP) (SCS 2017).

Polygon refinement was performed by adding the supplemental sampling data to previous Integral and Environ data sets, degrading the perchlorate concentrations following the methodology presented in Integral (2016), and utilizing GIS software to refine the extent of the polygons that have hazard quotients (HQs) of 2 or more based on the homegrown produce pathway.

Additionally, PCB polygons were refined based on historical data and supplemental sample data collected by SCS. Following the methodology presented in Environ (2012) and using the GIS software, the polygons presenting HQs of 2 or more via the residential direct contact pathway were refined. Since one of the supplemental soil samples collected by SCS contained elevated PCBs (HQ of 2) and was from an area not previously identified as requiring soil management, a new polygon is shown in addition to the refined polygons for PCBs. **Figure 1** shows the extent of the polygons furnished by Integral (2017), color-coded to reflect the results of SCS's supplemental sampling. Areas shown shaded green do not require special soil management procedures.

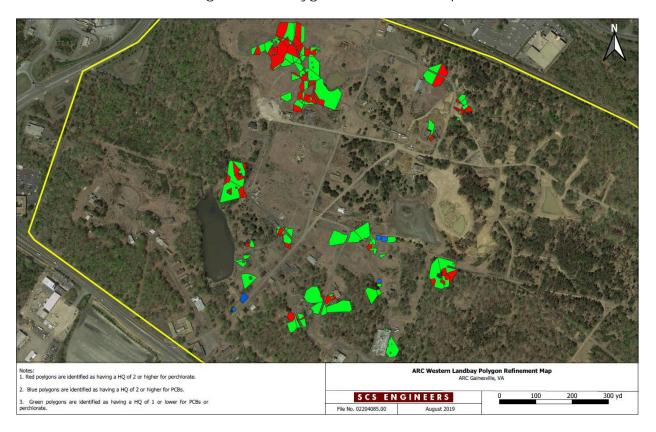


Figure 1. Polygon Refinement Map

**Figure 2** presents only the refined polygons. The areas shown in red or blue are the only remaining areas of the Western Landbay of the ARC Site where soils require special soil management procedures based on perchlorate (red) or PCB (blue) concentrations.

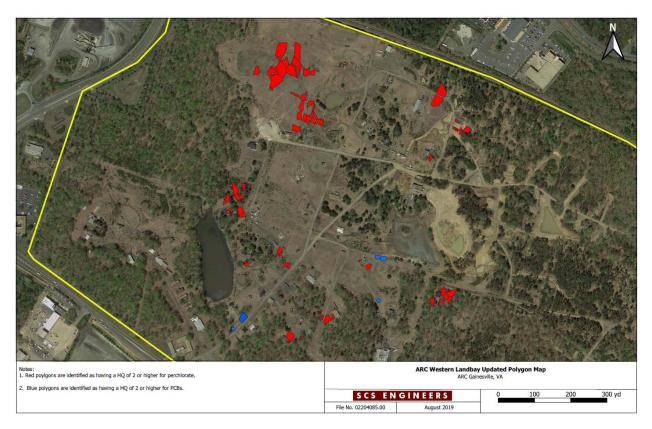


Figure 2. Updated Polygon Map

#### 2 INTRODUCTION

On behalf of Gainesville Associates, SCS Engineers prepared a Soil Management Plan (SMP) for the former Atlantic Research Corporation (ARC) Site located in Gainesville, Virginia (USEPA RCRA ID No. VAD023741705) ("the Site"). The objective of the SMP is to define the protocol for the management of soils exhibiting residual concentrations of Constituents of Concern, or COCs (principally low concentrations of perchlorate, semi-volatile organic compounds, and polychlorinated biphenyls, or PCBs) that may pose an unacceptable risk associated with residential land use exposures.

Integral Consulting, Inc. (consultants to ARC) provided coordinates for what it called Soil Removal Areas (SRAs), which define areas above risk-based concentrations considering direct contact and ingestion of homegrown produce (Integral, 2017). Tables 4, 5 and 7 of Integral (2016) show the sample locations where the Hazard Quotient (HQ) is expected to be 2 or greater as of various dates based on a risk-based target cleanup level of 0.0037 mg/kg for perchlorate and a homegrown produce pathway.

The HQs shown were based on historical and/or updated (2015) sampling results after application of a site-specific perchlorate dissipation rate. If a sample location had an HQ of 2 or greater, a subpolygon (Thiessen polygon) was drawn around that sample location. Sub-polygon boundaries were based on the distance to the nearest sample location with an HQ of 1 or lower. In some cases, the distance between sample locations is large, which results in sub-polygons that are large.

#### PURPOSE AND OBJECTIVE

The purpose of the work described in this report is to further characterize and delineate the remaining COCs (perchlorate and PCBs) in soils on the Western Landbay of the ARC Site that may pose an unacceptable risk associated with residential land use exposures. The work is intended to achieve the following objectives:

- Assure that redevelopment of the ARC Site is conducted in a manner that is protective of the health and safety of Site workers, future Site occupants, and the environment;
- Collect sufficient supplemental soil samples to support refinement of sub-polygons identified by consultants to ARC as exceeding risk-based thresholds for residential development.
- Supplement available information regarding potential contamination to support proper on-site reuse of soil excavated from SRAs for redevelopment purposes, as appropriate.

## 3 PILOT STUDY

SRA 2 was selected as the pilot test area for refinement of polygons. Figure 1 shows SRA 2, two sample results (B31AEC-1S and B32AEC-1S) were used by Integral to define sub-polygons that cover more than 5,600 square yards of area. Excavating this area to a depth of 3' would result in an excavated volume of over 5,600 cubic yards. Table 1 shows the perchlorate data for the two sample points associated with SRA 2 (Integral 2016). Both samples were collected at the edge of building foundations where perchlorate was handled, yet the inferred sub-polygon (Thiessen polygon) extends more than 100' from the sample location in some directions.



Figure 3. Soil Removal Area 2

Table 1. SRA 2 Historical and Predicted Concentrations

	Original Sample	Original Sample	1/1/2019 Predicted
Sample Location	Date	Concentration (mg/kg)	Concentration (mg/kg)
B31AEC-1S	9/1/2010	0.099	0.009
B32AEC-1S	9/2/2010	2.4	0.22

## **PILOT STUDY RESULTS**

To refine sub-polygon boundaries additional grab soil samples were collected at a depth of one foot and analyzed for perchlorate. The one foot grab samples are representative of soils in the 0 to 2 foot interval. Four soil samples were collected near the B32AEC-1S historical sample point, and three were collected near B31AEC-1S. A large soil berm is present on the east side of Building 31, so a surface soil sample was not collected in that direction; it is unlikely that perchlorate contamination would have spread uphill from Building 31 to the east. The figure below shows the sample locations.



Figure 4. SRA 2 Pilot Study Sample Locations

All seven soil samples were sent under chain-of-custody to GEL Laboratories LLC for perchlorate analysis via EPA Method 6850. Table 2 shows the analytical results for the seven samples. All of the supplemental samples either did not contain perchlorate above the detection limit or were found to contain perchlorate above the detection limit but too low to quantify (shown as estimated concentrations, "J").

Table 2. SRA 2 Polygon Refinement Soil Sample Results

		Perchlorate	Detection Limit	Hazard
Sample Location	Sample Date	Concentration (mg/kg)	(mg/kg)	Quotient
B31S-1	9/7/2018	ND	0.000607	NA
B31W-2	9/7/2018	ND	0.000626	NA
B31N-3	9/7/2018	ND	0.000679	NA
B32N-1	9/5/2018	0.00165 J	0.000573	NA
B32W-2	9/5/2018	ND	0.000580	NA
B32NW-3	9/5/2018	ND	0.000582	NA
B32SE-4	9/5/2018	0.000814 J	0.000602	NA

The Hazard Quotient column is the ratio of any detection to the 0.0037 mg/kg risk-based target cleanup level for perchlorate in residential vegetable gardens. A Hazard Quotient of 1 means the risks are acceptable. All of the results yielded a Hazard Quotient of below 1 or not applicable (NA). Based on the pilot test data, the extent of SRA 2 should be revised accordingly. Refined polygon limits are presented below in Section 3 of this report.

The pilot test confirmed that the extent of soil management polygons can be refined with supplemental soil sampling and analysis. We therefore conducted supplemental sampling and analysis to refine other polygons and to update the SMP accordingly.

## 4 SOIL SAMPLING

Additional soil sampling was performed by SCS on November 1, 2018, November 2, 2018, November 6, 2018, June 7, 2019, June 10, 2019, June 11, 2019, June 12, 2019, and June 13, 2019. A total of 83 soil samples were collected. Soil sampling was performed at a depth of 1 foot in all soil borings. The one foot grab samples are representative of soils in the 0 to 2 foot interval. A total of 48 perchlorate soil samples were collected. A total of 35 PCB soil samples were collected.

Soil samples were advanced utilizing a stainless steel hand auger. Soil samples were packed in coolers with ice and shipped under proper chain-of-custody to Galson Laboratories in East Syracuse, New York to be analyzed for perchlorate and PCBs. Table 1 presents the perchlorate soil concentrations. Table 2 presents the PCB soil concentrations. Appendix A includes the laboratory analytical reports.

#### SRA<sub>1</sub>

SRA 1 is located on the northern portion of the Western Landbay. A total of 14 soil samples were collected from SRA 1. **Table 3** presents soil sample chemical analysis for soil samples collected from SRA 1 by SCS. **Figure 5** illustrates the location of the supplemental soil borings completed by SCS and previous soil boring locations used by Integral to define the sub-polygons. Additionally, **Figure 5** illustrates polygons with an HQ of 2 or more in red and polygons with an HQ of 1 or NA in green. **Figure 6** illustrates the refined SRA 1 soil removal polygons in red.

Table 3.	SRA 1	Perchlorate Soil Chemical Analys	Sis
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Sample ID	Date	Concentration	Hazard Quotient
SRA1-1	6/7/2019	ND	NA
SRA1-2	6/7/2019	ND	NA
SRA1-3	6/7/2019	ND	NA
SRA1-4	6/7/2019	ND	NA
SRA1-5	6/7/2019	ND	NA
SRA1-6	6/7/2019	ND	NA
SRA1-7	6/7/2019	ND	NA
SRA1-8	6/7/2019	ND	NA
SRA1-9	6/10/2019	7.37	2
SRA1-10	6/10/2019	ND	NA
SRA1-11	6/10/2019	11.6	3
SRA1-12	6/10/2019	1.01	NA
SRA1-13	6/10/2019	ND	NA
SRA1-14	6/10/2019	2.21	1

Figure 5. SRA 1 Polygon Refinement Map

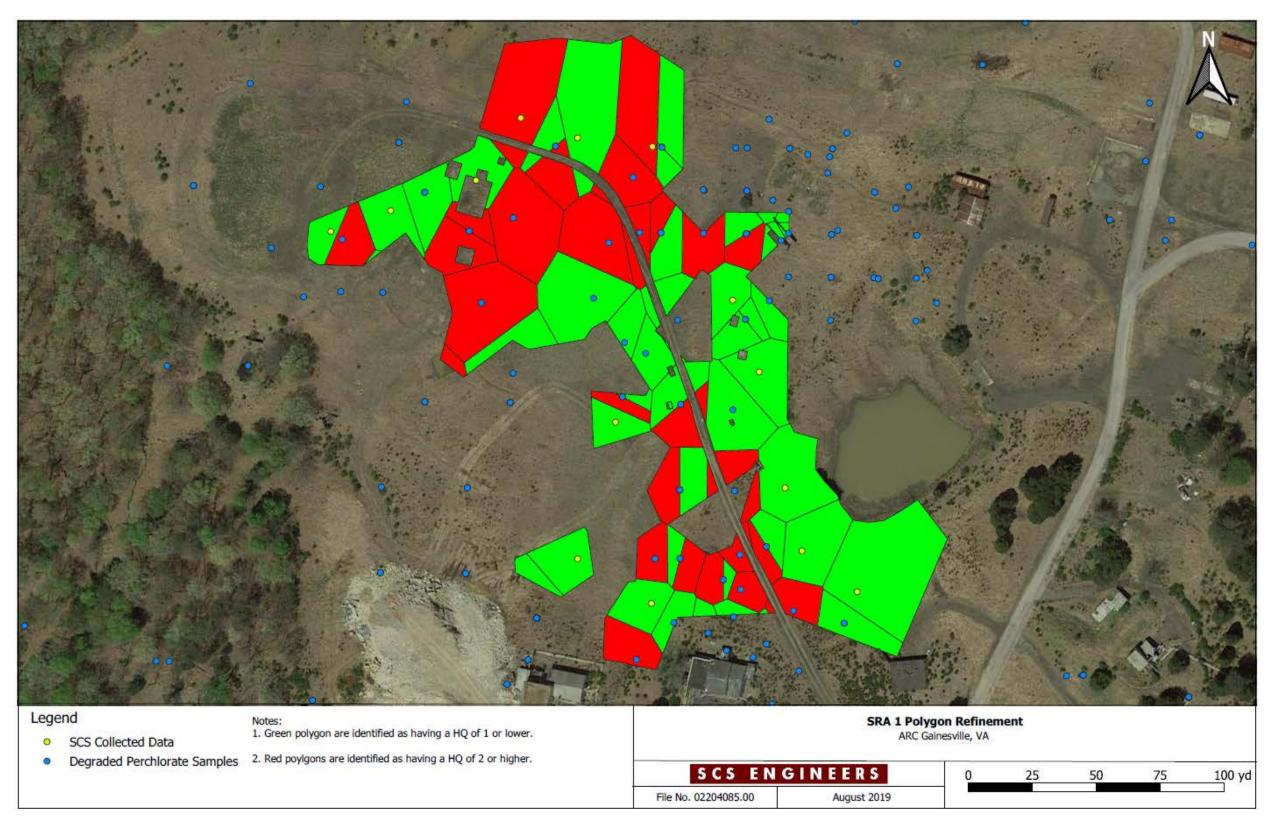
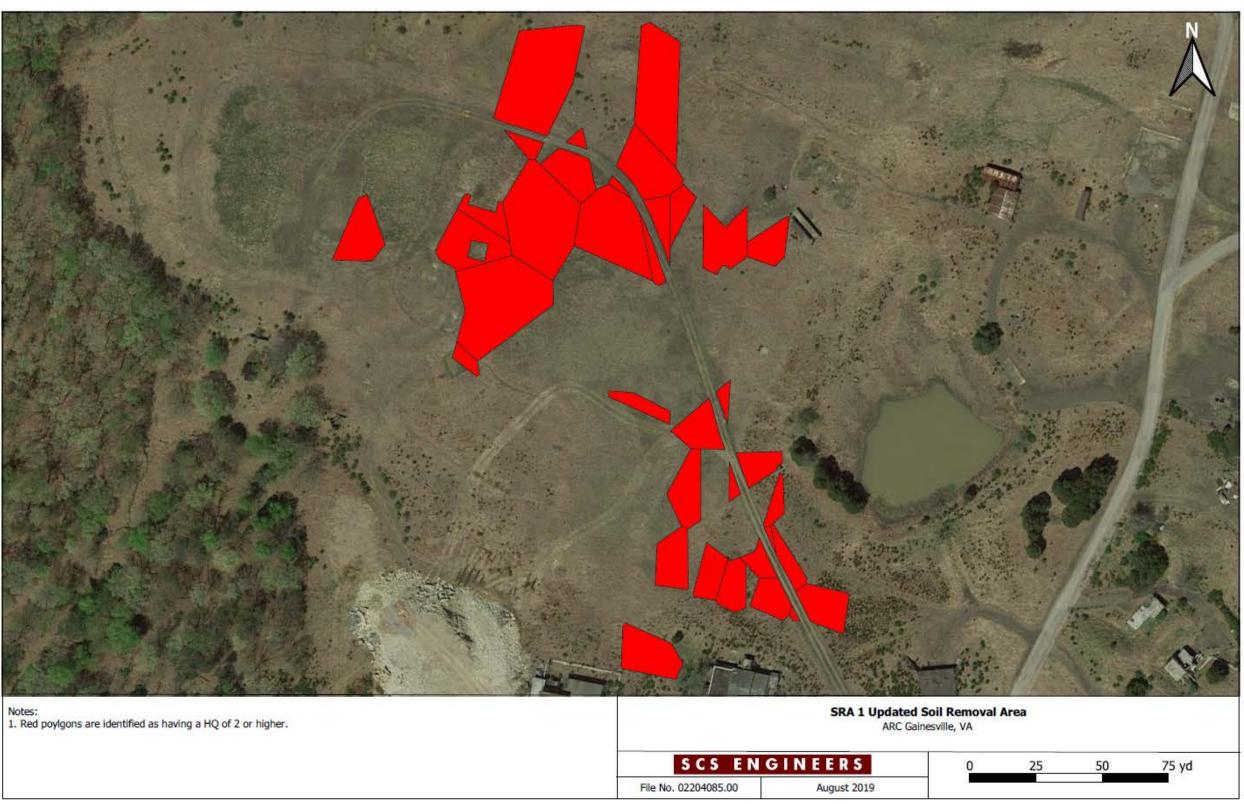


Figure 6. SRA 1 Updated Soil Removal Area



## SRA<sub>2</sub>

SRA 2 is located on the western portion of the Western Landbay. A total of 10 soil samples were collected from SRA1. **Table 4** presents soil sample chemical analysis for soil samples collected from SRA 2 by SCS. **Figure 7** illustrates the location of supplmental soil borings completed by SCS and previous soil boring locations used by Integral to define the sub-polygons. Additionally, **Figure 7** illustrates polygons with an HQ of 2 or more in red and polygons with an HQ of 1 or NA in green. **Figure 8** illustrates the proposed refined SRA 2 soil removal polygons in red.

Table 4. SRA2 Perchlorate Soil Chemical Analysis

Sample ID	Date	Concentration	Hazard Quotient
B31S-1	9/7/2018	ND	NA
B31W-2	9/7/2018	ND	NA
B31N-3	9/7/2018	ND	NA
B32N-1	9/5/2018	1.65	NA
B32SW-2	9/5/2018	ND	NA
B32NW-3	9/5/2018	ND	NA
B32SE-4	9/7/2018	0.814	NA
SRA2-15	6/10/2019	ND	NA
SRA2-16	6/10/2019	ND	NA
SRA2-17	6/10/2019	ND	NA

Legend SRA 2 Polygon Refinement ARC Gainesville, VA Notes:

1. Green polygon are identified as having a HQ of 1 or lower. SCS Collected Data Degraded Perchlorate Samples
 Red poylgons are identified as having a HQ of 2 or higher. SCS ENGINEERS 25 50 yd File No. 02204085.00 August 2019

Figure 7. SRA 2 Polygon Refinement Map

Figure 8. SRA 2 Updated Soil Removal Area



## SRA<sub>3</sub>

SRA 3 is located on the western portion of the Western Landbay. A total of 9 soil samples were collected from SRA3. **Table 5** presents soil sample chemical analysis for soil samples collected from SRA 3 by SCS. **Figure 9** illustrates the location of the supplemental soil borings completed by SCS and previous soil boring locations used by Integral to define the sub-polygons. Additionally, **Figure 9** illustrates polygons with an HQ of 2 or more in red and polygons with an HQ of 1 or NA in green. **Figure 10** illustrates the proposed refined SRA 3 soil removal polygons in red.

Table 5. SRA 3 Perchlorate Soil Chemical Analysis

Sample ID	Date	Concentration	Hazard Quotient
SRA3-18	6/11/2019	ND	NA
SRA3-19	6/11/2019	ND	NA
SRA3-20	6/11/2019	ND	NA
SRA3-21	6/11/2019	ND	NA
SRA6-22	6/11/2019	ND	NA
SRA3-18	6/11/2019	ND	NA
SRA3-19	6/11/2019	ND	NA
SRA3-20	6/11/2019	ND	NA
SRA3-21	6/11/2019	ND	NA

Figure 9. SRA 3 Polygon Refinement Map

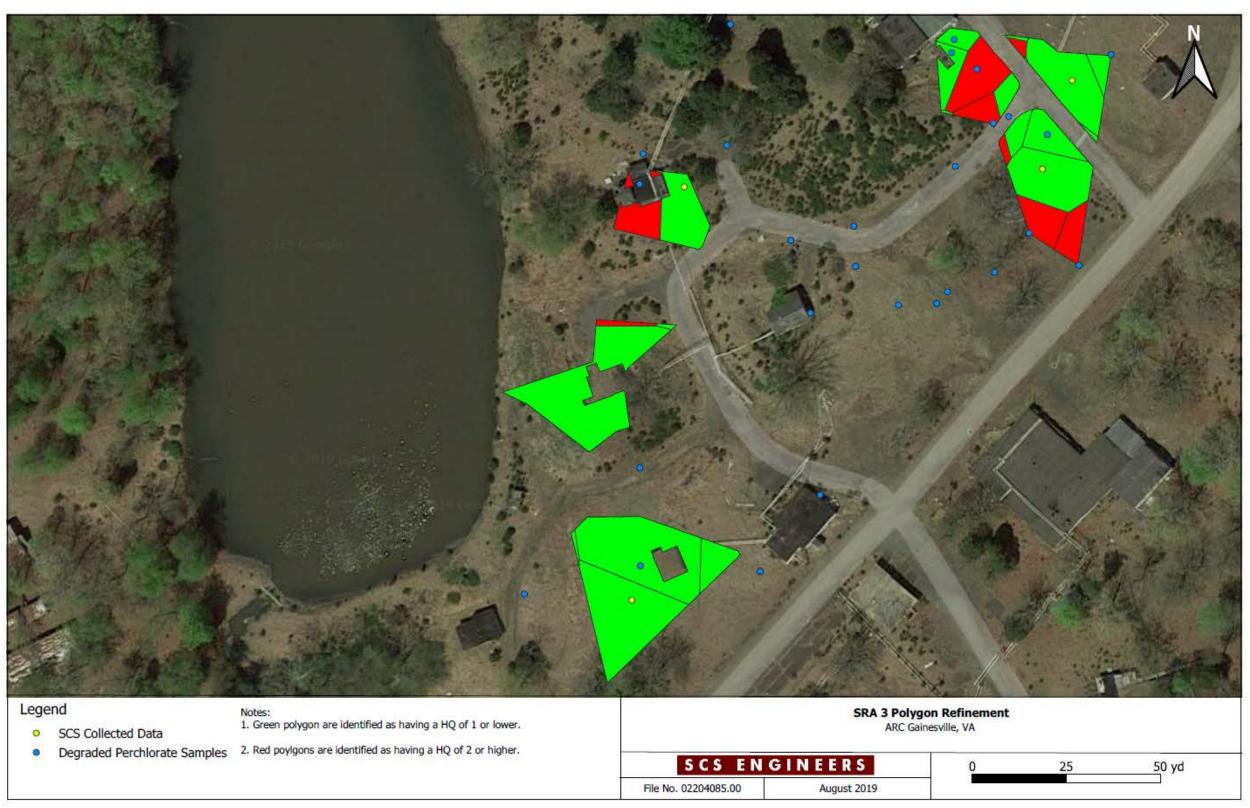


Figure 10. SRA 3 Updated Soil Removal Area



#### SRA 4

SRA 4 is located on the central portion of the Western Landbay. A total of 4 soil samples were collected from SRA4. **Table 6** presents soil sample chemical analysis for soil samples collected from SRA 4 by SCS. **Figure 11** illustrates the location of the supplemental soil borings completed by SCS and previous soil boring locations used by Integral to define the sub-polygons. Additionally, **Figure 11** illustrates polygons with an HQ of 2 or more in red and polygons with an HQ of 1 or NA in green. **Figure 12** illustrates the proposed refined SRA 4 soil removal polygons in red.

In June of 2012, the remnant slab of Building 43 was removed to facilitate the excavation of soils beneath the slab of Building 43. These soils were excavated in October of 2012. The portion of the polygon remaining in SRA 4 following refinement (**Figure 10**) reflects the soils previously excavated from the Building 43 area.

Table 6. SRA 4 Perchlorate Soil Chemical Analysis

Sample ID	Date	Concentration	<b>Hazard Quotient</b>
SRA4-30	6/12/2019	ND	NA
SRA4-31	6/12/2019	ND	NA
SRA4-32	6/12/2019	ND	NA
SRA4-33	6/12/2019	ND	NA

Legend SRA 4 Polygon Refinement ARC Gainesville, VA Notes: 1. Green polygon are identified as having a HQ of 1 or lower. SCS Collected Data • Degraded Perchlorate Samples 2. Red poylgons are identified as having a HQ of 2 or higher. SCS ENGINEERS 50 yd

Figure 11. SRA 4 Polygon Refinement Map

File No. 02204085.00

August 2019

Figure 12. SRA 4 Updated Soil Removal Area



## SRA<sub>5</sub>

SRA 5 is located on the central portion of the Western Landbay. A total of 4 soil samples were collected from SRA 5. **Table 7** presents soil sample chemical analysis for soil samples collected from SRA 5 by SCS. **Figure 13** illustrates the location of the supplemental soil borings completed by SCS and previous soil boring locations used by Integral to define the sub-polygons. Additionally, **Figure 13** illustrates polygons with an HQ of 2 or more in red and polygons with an HQ of 1 or NA in green. **Figure 14** illustrates the proposed refined SRA5 soil removal polygons in red.

Table 7. SRA 5 Perchlorate Soil Chemical Analysis

Sample ID	Date	Concentration	Hazard Quotient
SRA5-24	6/12/2019	ND	NA
SRA5-25	6/12/2019	ND	NA
SRA5-26	6/12/2019	0.564	NA
SRA5-27	6/12/2019	0.598	NA

Figure 13. SRA 5 Polygon Refinement Map

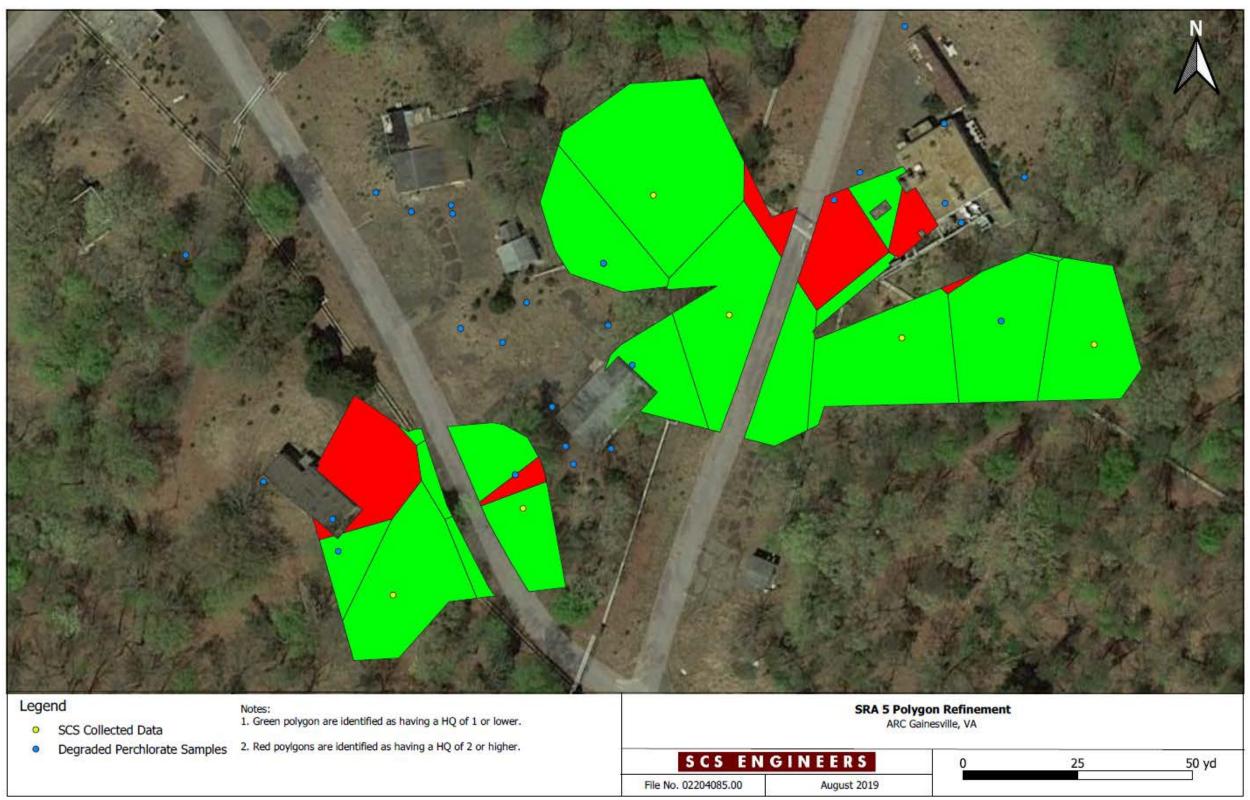


Figure 14. SRA 5 Updated Soil Removal Area



## SRA<sub>6</sub>

SRA 6 is located on the central portion of the Western Landbay. A total of 2 soil samples were collected from SRA4. **Table 8** presents soil sample chemical analysis for soil samples collected from SRA 6 by SCS. **Figure 15** illustrates the location of the supplemental soil borings completed by SCS and previous soil boring locations used by Integral to define the sub-polygons. Additionally, **Figure 15** illustrates polygons with an HQ of 2 or more in red and polygons with an HQ of 1 or NA in green. **Figure 16** illustrates the proposed refined SRA 6 soil removal polygons in red.

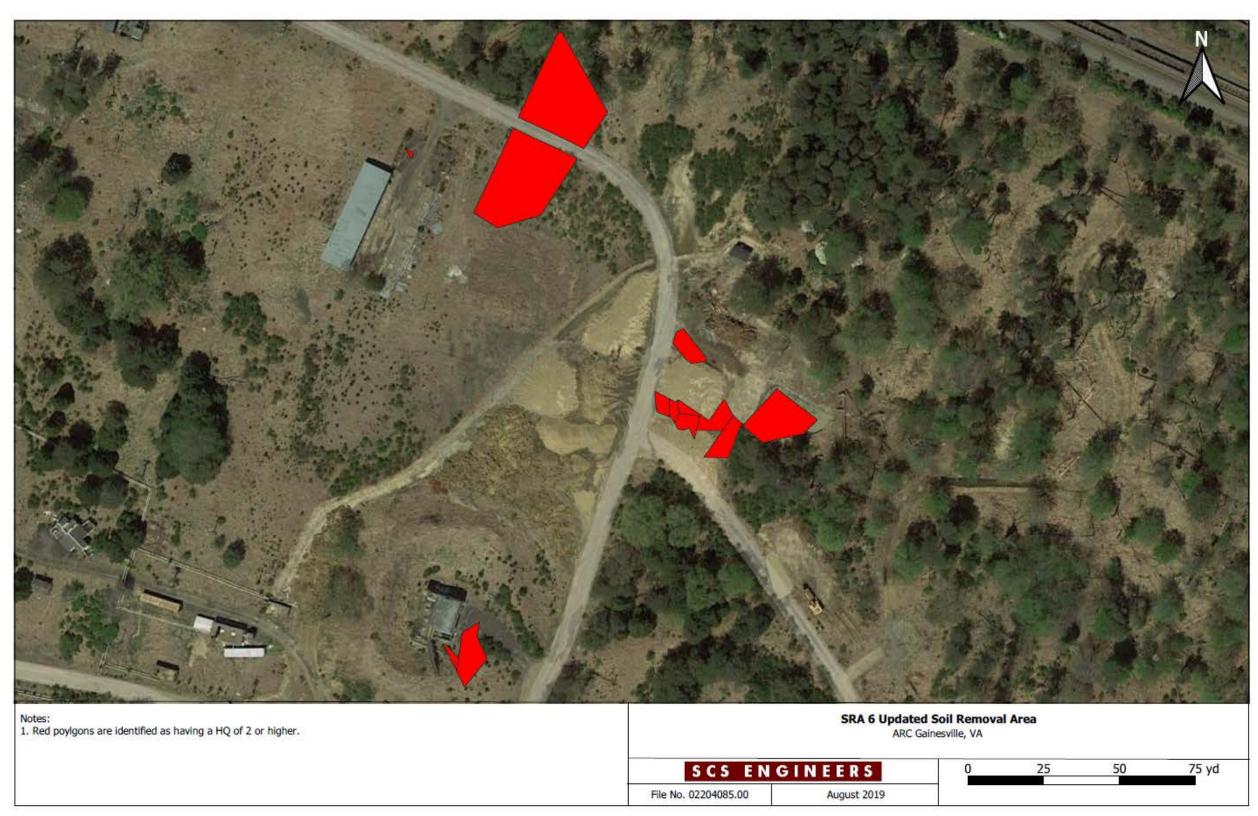
Table 8. SRA 6 Perchlorate Soil Chemical Analysis

Sample ID	Date	Concentration	Hazard Quotient
SRA6-22	6/11/2019	ND	NA
SRA6-23	6/11/2019	ND	NA

Legend SRA 6 Polygon Refinement ARC Gainesville, VA Notes:
1. Green polygon are identified as having a HQ of 1 or lower. SCS Collected Data • Degraded Perchlorate Samples 2. Red poylgons are identified as having a HQ of 2 or higher. SCS ENGINEERS 75 yd File No. 02204085.00 August 2019

Figure 15. SRA 6 Polygon Refinement Map

Figure 16. SRA 6 Updated Soil Removal Area



## SRA8

SRA 8 is located on the central portion of the Western Landbay. A total of 5 soil samples were collected from SRA4. **Table 9** presents soil sample chemical analysis for soil samples collected from SRA 8 by SCS. **Figure 17** illustrates the location of the supplemental soil borings completed by SCS and previous soil boring locations used by Integral to define the sub-polygons. Additionally, **Figure 17** illustrates polygons with an HQ of 2 or more in red and polygons with an HQ of 1 or NA in green. **Figure 18** illustrates the proposed refined SRA 8 soil removal polygons in red.

Table 9. SRA 8 Perchlorate Soil Chemical Analysis

Sample ID	Date	Concentration	Hazard Quotient
SRA8-34	6/13/2019	ND	NA
SRA8-35	6/13/2019	ND	NA
SRA8-36	6/13/2019	ND	NA
SRA8-37	6/13/2019	ND	NA
SRA8-38	6/13/2019	ND	NA

Legend Notes:  $1. \ \, \text{Green polygon are identified as having a HQ of 1 or lower}.$ SRA 8 Polygon Refinement ARC Gainesville, VA SCS Collected Data Degraded Perchlorate Samples
 Red poylgons are identified as having a HQ of 2 or higher. SCS ENGINEERS 150 ft File No. 02204085.00 August 2019

Figure 17. SRA 8 Polygon Refinement Map

Notes: 1. Red poylgons are identified as having a HQ of 2 or higher. SRA 8 Updated Soil Removal Area ARC Gainesville, VA SCS ENGINEERS 50 100 ft File No. 02204085.00 August 2019

Figure 18. SRA 8 Updated Soil Removal Area

## SRA 9

SRA 9 is located on the central portion of the Western Landbay. A total of 3 soil samples were collected from SRA4. **Table 10** presents soil sample chemical analysis for soil samples collected from SRA 9 by SCS. **Figure 19** illustrates the location of the supplemental soil borings completed by SCS and previous soil boring locations used by Integral to define the sub-polygons. Additionally, **Figure 19** illustrates polygons with an HQ of 1 or NA in green. SRA 9 has been totally eliminated as a results of the polygon refinement.

Table 10. SRA 9 Perchlorate Soil Chemical Analysis

Sample ID	Date	Concentration	Hazard Quotient
SRA10-39	6/13/2019	0.698	NA
SRA10-40	6/13/2019	ND	NA
SRA10-41	6/13/2019	ND	NA

Note: These samples should be identified as SRA9. The sample IDs were erroneously noted as SRA10.

Figure 19. SRA 9 Polygon Refinement Map



## PCB SOIL SAMPLING

PCB soil sampling was conducted in a number of locations on the Western Landbay. A total of 18 PCB soil samples were collected. **Table 9** presents soil sample chemical analysis for soil samples collected from SRA 9 by SCS. **Figure 20** illustrates the location of the supplemental soil borings completed by SCS and previous soil boring locations used by Integral to define the sub-polygons. Additionally, **Figure 20** illustrates polygons containing a hazard quotient for PCB concentrations of 2 or higher in red and polygons containing a hazard quotient of 1 or NA for PCB concentrations in green. **Figure 21** illustrates the new proposed PCB soil removal polygons in red. A new polygon was identified to the south of SRA 3. This polygon was established due to a concentration of PCBs of 6.61 mg/kg, resulting in a Hazard Quotient of 2.

Table 11. PCB Soil Chemical Analysis

ID	Date	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Hazard Quotient
4-1	11/6/2018	ND	ND	ND	ND	0.360	ND	ND	NA
4-2	11/6/2018	ND	NA						
4-3	11/6/2018	ND	NA						
4-4	11/6/2018	ND	NA						
4-5	11/6/2018	ND	NA						
4-6	11/6/2018	ND	NA						
5-1	11/1/2018	ND	ND	ND	ND	0.032	ND	ND	NA
5-2	11/1/2018	ND	ND	ND	ND	0.166	ND	ND	NA
5-3	11/1/2018	ND	ND	ND	ND	0.63	ND	ND	NA
5-4	11/1/2018	ND	ND	ND	ND	1.32	ND	ND	NA
5-5	11/1/2018	ND	ND	ND	ND	0.207	ND	ND	NA
5-6	11/1/2018	ND	ND	ND	ND	0.57	ND	ND	NA
5-7	11/1/2018	ND	NA						
5-8	11/1/2018	ND	NA						
5-9	11/1/2018	ND	ND	ND	ND	0.159	ND	ND	NA
5-10	11/1/2018	ND	NA						
5-11	11/1/2018	ND	NA						
6-1	11/2/2018	ND	ND	ND	ND	1.16	ND	ND	NA
6-2	11/2/2018	ND	NA						
6-3	11/2/2018	ND	ND	ND	ND	0.056	ND	ND	NA
6-4	11/2/2018	ND	NA						
6-5	11/2/2018	ND	NA						
6-6	11/2/2018	ND	NA						
6-7	11/2/2018	ND	NA						
6-8	11/2/2018	ND	NA						
6-9	11/2/2018	ND	NA						
6-10	11/2/2018	ND	ND	ND	ND	3.74	ND	ND	1
6-11	11/2/2018	ND	NA						
6-12	11/2/2018	ND	ND	ND	ND	ND	0.823	ND	NA
6-13	11/2/2018	ND	NA						
6-14	11/2/2018	ND	ND	ND	ND	ND 0.04	0.404	ND	NA
6-15	11/2/2018	ND	ND	ND	ND	6.61	ND	ND	2
6-16	11/2/2018	ND	ND	ND	ND	ND	1.11	ND	NA
6-17	11/2/2018	ND	NA						
6-18	11/2/2018	ND	ND	ND	ND	ND	0.337	ND	NA

Note:

Concentrations are presented in mg/kg.

A HQ of 0 is presented as NA.

Figure 20. PCB Polygon Refinement Map

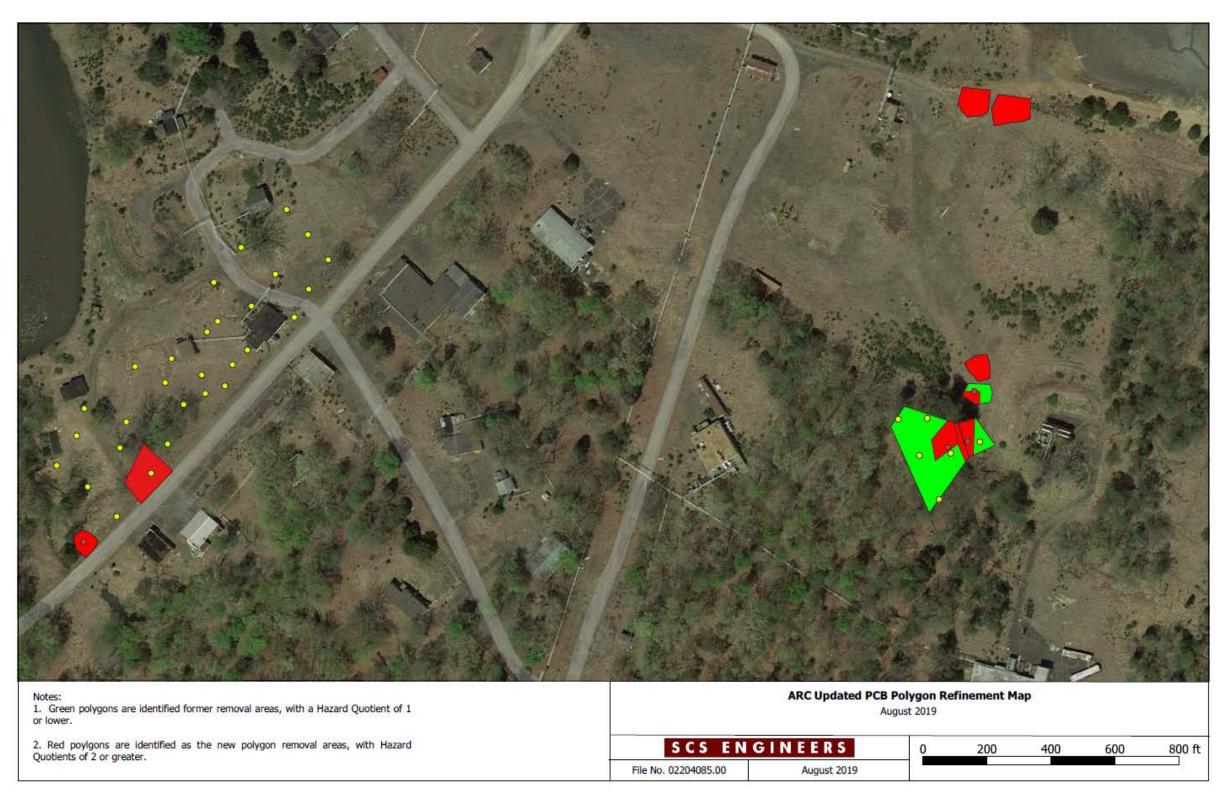


Figure 21. SRA 9 Updated PCB Soil Removal Area



## 5 THIESSEN POLYGON REFINEMENT

Thiessen polygon refinement was performed by adding the supplemental sampling data to previous Integral and Environ data sets, degrading the perchlorate concentrations following the methodology presented in Integral (2016) and utilizing GIS software to further partition the existing SRAs into smaller polygons. Updated polygons were mapped showing areas with HQs of 2 or more based on the homegrown produce pathway.

Additionally, PCB polygons were refined based on historical data and supplemental sample data collected by SCS. Following the methodology presented in Environ (2012) and using the GIS software, the polygons presenting HQs of 2 or more via the residential direct contact pathway were refined. Since one of the supplemental soil samples collected by SCS contained elevated PCBs (HQ of 2) and was from an area not previously identified as requiring soil management, a new polygon is shown in addition to the refined polygons for PCBs.

#### 6 REFERENCES

Geosyntec Consultants. 2011. Soil Interim Measures (IM) Work Plan. March.

- ENVIRON International Corp. 2012. RCRA Facility Investigation Baseline Risk Assessment. Atlantic Research Corporation Facility, Gainesville, VA. November 2.
- ENVIRON International Corp. 2013. RCRA Facility Investigation Soil Interim Measure Project Completion Report. Atlantic Research Corporation Facility, Gainesville, VA. July 26.
- Integral Consulting, Inc. 2016. Human Health Risk Assessment Addendum—Newly Collected Perchlorate Soil Data Analysis and Overall HHRA Findings. July.
- Integral Consulting, Inc., 2017. Emails and attachments from Judi Durda to Mike McLaughlin dated 11/22/17 and from Jake Wilhelm to Mike McLaughlin dated 11/28/17 on subject of Polygon Coordinates.
- SCS Engineers. 2017. Draft Soil Management Plan, Former ARC Facility, Gainesville, Virginia. September 8.

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# Appendix A Chemical Analysis



#### **Certificate of Analysis**

#### Final Report

Laboratory Order ID 18K0387

Client Name: SCS Engineers-Reston

Date Received: Noven

November 8, 2018 10:25

11260 Roger Bacon Drive Suite 300

Date Issued: N

November 15, 2018 18:24

Reston, VA 20190

Project Number:

02204085.00

Submitted To: Austin Drooger

Purchase Order:

Client Site I.D.: ARC - Gainesville, VA

E0 70/415

Enclosed are the results of analyses for samples received by the laboratory on 11/08/2018 10:25. If you have any questions concerning this report, please feel free to contact the laboratory.

Sincerely,

**Ted Soyars** 

Laboratory Manager

#### End Notes:

The test results listed in this report relate only to the samples submitted to the laboratory and as received by the Laboratory.

Unless otherwise noted, the test results for solid materials are calculated on a wet weight basis. Analyses for pH, dissolved oxygen, temperature, residual chlorine and sulfite that are performed in the laboratory do not meet NELAC requirements due to extremely short holding times. These analyses should be performed in the field. The results of field analyses performed by the Sampler included in the Certificate of Analysis are done so at the client's request and are not included in the laboratory's fields of certification nor have they been audited for adherence to a reference method or procedure.

The signature on the final report certifies that these results conform to all applicable NELAC standards unless otherwise specified. For a complete list of the Laboratory's NELAC certified parameters please contact customer service.

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## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number: 02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

## ANALYTICAL REPORT FOR SAMPLES

## Laboratory Order ID 18K0387

Samula ID	I ali anatama 15	Motolica	Deta Commission	Data Donahard
Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
4-1	18K0387-01	Solids	11/06/2018 12:00	11/08/2018 10:25
4-2	18K0387-02	Solids	11/06/2018 12:30	11/08/2018 10:25
4-3	18K0387-03	Solids	11/06/2018 13:00	11/08/2018 10:25
4-4	18K0387-04	Solids	11/06/2018 13:30	11/08/2018 10:25
4-5	18K0387-05	Solids	11/06/2018 14:00	11/08/2018 10:25
4-6	18K0387-06	Solids	11/06/2018 14:30	11/08/2018 10:25
5-1	18K0387-07	Solids	11/01/2018 12:10	11/08/2018 10:25
5-2	18K0387-08	Solids	11/01/2018 12:40	11/08/2018 10:25
5-3	18K0387-09	Solids	11/01/2018 12:55	11/08/2018 10:25
5-4	18K0387-10	Solids	11/01/2018 10:30	11/08/2018 10:25
5-5	18K0387-11	Solids	11/01/2018 10:40	11/08/2018 10:25
5-6	18K0387-12	Solids	11/01/2018 10:50	11/08/2018 10:25
5-7	18K0387-13	Solids	11/01/2018 11:00	11/08/2018 10:25
5-8	18K0387-14	Solids	11/01/2018 11:20	11/08/2018 10:25
5-9	18K0387-15	Solids	11/01/2018 11:40	11/08/2018 10:25
5-10	18K0387-16	Solids	11/01/2018 11:40	11/08/2018 10:25
5-11	18K0387-17	Solids	11/01/2018 11:50	11/08/2018 10:25
6-1	18K0387-18	Solids	11/02/2018 09:00	11/08/2018 10:25
6-2	18K0387-19	Solids	11/02/2018 09:30	11/08/2018 10:25
6-3	18K0387-20	Solids	11/02/2018 09:45	11/08/2018 10:25
6-4	18K0387-21	Solids	11/02/2018 09:55	11/08/2018 10:25
6-5	18K0387-22	Solids	11/02/2018 10:15	11/08/2018 10:25
6-6	18K0387-23	Solids	11/02/2018 10:30	11/08/2018 10:25



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Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

## ANALYTICAL REPORT FOR SAMPLES Laboratory Order ID 18K0387

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Janiple ID	Laboratory ID	IVIQUIX	Date Sampled	Date Neceived
6-7	18K0387-24	Solids	11/02/2018 10:40	11/08/2018 10:25
6-8	18K0387-25	Solids	11/02/2018 11:00	11/08/2018 10:25
6-9	18K0387-26	Solids	11/02/2018 11:20	11/08/2018 10:25
6-10	18K0387-27	Solids	11/02/2018 11:40	11/08/2018 10:25
6-11	18K0387-28	Solids	11/02/2018 12:00	11/08/2018 10:25
6-12	18K0387-29	Solids	11/02/2018 12:15	11/08/2018 10:25
6-13	18K0387-30	Solids	11/02/2018 12:30	11/08/2018 10:25
6-14	18K0387-31	Solids	11/02/2018 12:40	11/08/2018 10:25
6-15	18K0387-32	Solids	11/02/2018 12:50	11/08/2018 10:25
6-16	18K0387-33	Solids	11/02/2018 13:00	11/08/2018 10:25
6-17	18K0387-34	Solids	11/02/2018 13:10	11/08/2018 10:25
6-18	18K0387-35	Solids	11/02/2018 13:20	11/08/2018 10:25

PCB results have been calculated based on dry weight.



## **Certificate of Analysis**

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Reston VA, 20190

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Project Number:

02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

Sample I.D. 4-1

Laboratory Sample ID: 18K0387-01

**Grab Date/Time:** 11/06/2018 12:00

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	01	SW8082A	<0.133 mg/kg dry		0.133	1	11/14/18 09:25	11/14/18 17:36	HLM
PCB as Aroclor 1221	01	SW8082A	<0.133 mg/kg dry		0.133	1	11/14/18 09:25	11/14/18 17:36	HLM
PCB as Aroclor 1232	01	SW8082A	<0.133 mg/kg dry		0.133	1	11/14/18 09:25	11/14/18 17:36	HLM
PCB as Aroclor 1242	01	SW8082A	<0.133 mg/kg dry		0.133	1	11/14/18 09:25	11/14/18 17:36	HLM
PCB as Aroclor 1248	01RE1	SW8082A	0.360 mg/kg dry		0.133	1	11/14/18 09:25	11/15/18 12:20	HLM
PCB as Aroclor 1254	01	SW8082A	<0.133 mg/kg dry		0.133	1	11/14/18 09:25	11/14/18 17:36	HLM
PCB as Aroclor 1260	01	SW8082A	<0.133 mg/kg dry		0.133	1	11/14/18 09:25	11/14/18 17:36	HLM
Surr: DCB	01	SW8082A	55.0 %		30-105	5	11/14/18 09:25	11/14/18 17:36	HLM
Surr: TCMX	01	SW8082A	42.5 %		30-105	5	11/14/18 09:25	11/14/18 17:36	HLM
Wet Chemistry Analysis									
Percent Solids	01	SM18 2540G	72.9 %		0.10	1	11/14/18 12:48	11/14/18 12:48	PMP



## **Certificate of Analysis**

#### Final Report

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11/15/2018 18:24

11260 Roger Bacon Drive Suite 30 Reston VA, 20190

Submitted To: **Austin Drooger** 

Project Number:

02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

18K0387-02 Sample I.D. 4-2 **Laboratory Sample ID:** 

Grab Date/Time: 11/06/2018 12:30

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	02	SW8082A	<0.141 mg/kg dry		0.141	1	11/14/18 09:25	11/14/18 17:55	HLM
PCB as Aroclor 1221	02	SW8082A	<0.141 mg/kg dry		0.141	1	11/14/18 09:25	11/14/18 17:55	HLM
PCB as Aroclor 1232	02	SW8082A	<0.141 mg/kg dry		0.141	1	11/14/18 09:25	11/14/18 17:55	HLM
PCB as Aroclor 1242	02	SW8082A	<0.141 mg/kg dry		0.141	1	11/14/18 09:25	11/14/18 17:55	HLM
PCB as Aroclor 1248	02	SW8082A	<0.141 mg/kg dry		0.141	1	11/14/18 09:25	11/14/18 17:55	HLM
PCB as Aroclor 1254	02	SW8082A	<0.141 mg/kg dry		0.141	1	11/14/18 09:25	11/14/18 17:55	HLM
PCB as Aroclor 1260	02	SW8082A	<0.141 mg/kg dry		0.141	1	11/14/18 09:25	11/14/18 17:55	HLM
Surr: DCB	02	SW8082A	67.5 %		30-105	;	11/14/18 09:25	11/14/18 17:55	HLM
Surr: TCMX	02	SW8082A	62.5 %		30-105	i	11/14/18 09:25	11/14/18 17:55	HLM
Wet Chemistry Analysis									
Percent Solids	02	SM18 2540G	69.6 %		0.10	1	11/14/18 12:48	11/14/18 12:48	PMP



## **Certificate of Analysis**

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Date Issued: 11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number: 02204085.00

Client Site I.D.: ARC - Gainesville, VA Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

 Sample I.D.
 4-3
 Laboratory Sample ID:
 18K0387-03

**Grab Date/Time:** 11/06/2018 13:00

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	03	SW8082A	<0.135 mg/kg dry		0.135	1	11/14/18 09:25	11/14/18 18:13	HLM
PCB as Aroclor 1221	03	SW8082A	<0.135 mg/kg dry		0.135	1	11/14/18 09:25	11/14/18 18:13	HLM
PCB as Aroclor 1232	03	SW8082A	<0.135 mg/kg dry		0.135	1	11/14/18 09:25	11/14/18 18:13	HLM
PCB as Aroclor 1242	03	SW8082A	<0.135 mg/kg dry		0.135	1	11/14/18 09:25	11/14/18 18:13	HLM
PCB as Aroclor 1248	03	SW8082A	<0.135 mg/kg dry		0.135	1	11/14/18 09:25	11/14/18 18:13	HLM
PCB as Aroclor 1254	03	SW8082A	<0.135 mg/kg dry		0.135	1	11/14/18 09:25	11/14/18 18:13	HLM
PCB as Aroclor 1260	03	SW8082A	<0.135 mg/kg dry		0.135	1	11/14/18 09:25	11/14/18 18:13	HLM
Surr: DCB	03	SW8082A	45.0 %		30-105	;	11/14/18 09:25	11/14/18 18:13	HLM
Surr: TCMX	03	SW8082A	52.5 %		30-105	i	11/14/18 09:25	11/14/18 18:13	HLM
Wet Chemistry Analysis									
Percent Solids	03	SM18 2540G	73.4 %		0.10	1	11/14/18 12:48	11/14/18 12:48	PMP



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11/15/2018 18:24

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Reston VA, 20190

Submitted To: Austin Drooger

Project Number:

02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

Sample I.D. 4-4

Laboratory Sample ID:

18K0387-04

Grab Date/Time:

11/06/2018 13:30

Field Residual CI:

				Reporting		Sample Prep	Analysis	
Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
and PCBs	by GC/ECD							
04	SW8082A	<0.138 mg/kg dry		0.138	1	11/14/18 09:25	11/14/18 18:32	HLM
04	SW8082A	<0.138 mg/kg dry		0.138	1	11/14/18 09:25	11/14/18 18:32	HLM
04	SW8082A	<0.138 mg/kg dry		0.138	1	11/14/18 09:25	11/14/18 18:32	HLM
04	SW8082A	<0.138 mg/kg dry		0.138	1	11/14/18 09:25	11/14/18 18:32	HLM
04	SW8082A	<0.138 mg/kg dry		0.138	1	11/14/18 09:25	11/14/18 18:32	HLM
04	SW8082A	<0.138 mg/kg dry		0.138	1	11/14/18 09:25	11/14/18 18:32	HLM
04	SW8082A	<0.138 mg/kg dry		0.138	1	11/14/18 09:25	11/14/18 18:32	HLM
04	SW8082A	52.5 %		30-105		11/14/18 09:25	11/14/18 18:32	HLM
04	SW8082A	57.5 %		30-105		11/14/18 09:25	11/14/18 18:32	HLM
04	SM18 2540G	72.3 %		0.10	1	11/14/18 12:48	11/14/18 12:48	PMP
-	04 04 04 04 04 04 04 04 04	and PCBs by GC/ECD  04 SW8082A  04 SW8082A	and PCBs by GC/ECD         04       SW8082A       <0.138 mg/kg dry	and PCBs by GC/ECD         04       SW8082A       <0.138 mg/kg dry	Samp ID         Method         Result         Qual         Limit           and PCBs by GC/ECD         04         SW8082A         <0.138 mg/kg dry	Samp ID         Method         Result         Qual         Limit         D.F.           and PCBs by GC/ECD           04         SW8082A         <0.138 mg/kg dry	Samp ID         Method         Result         Qual         Limit         D.F.         Date/Time           and PCBs by GC/ECD           04         SW8082A         <0.138 mg/kg dry	Samp ID         Method         Result         Qual         Limit         D.F.         Date/Time         Date/Time           and PCBs by GC/ECD           04         SW8082A         <0.138 mg/kg dry



## **Certificate of Analysis**

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Project Number: 02204085.00

Client Site I.D.: ARC - Gainesville, VA Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

 Sample I.D.
 4-5
 Laboratory Sample ID:
 18K0387-05

**Grab Date/Time:** 11/06/2018 14:00

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	05	SW8082A	<0.127 mg/kg dry		0.127	1	11/14/18 09:25	11/14/18 18:50	HLM
PCB as Aroclor 1221	05	SW8082A	<0.127 mg/kg dry		0.127	1	11/14/18 09:25	11/14/18 18:50	HLM
PCB as Aroclor 1232	05	SW8082A	<0.127 mg/kg dry		0.127	1	11/14/18 09:25	11/14/18 18:50	HLM
PCB as Aroclor 1242	05	SW8082A	<0.127 mg/kg dry		0.127	1	11/14/18 09:25	11/14/18 18:50	HLM
PCB as Aroclor 1248	05	SW8082A	<0.127 mg/kg dry		0.127	1	11/14/18 09:25	11/14/18 18:50	HLM
PCB as Aroclor 1254	05	SW8082A	<0.127 mg/kg dry		0.127	1	11/14/18 09:25	11/14/18 18:50	HLM
PCB as Aroclor 1260	05	SW8082A	<0.127 mg/kg dry		0.127	1	11/14/18 09:25	11/14/18 18:50	HLM
Surr: DCB	05	SW8082A	67.5 %		30-105		11/14/18 09:25	11/14/18 18:50	HLM
Surr: TCMX	05	SW8082A	65.0 %		30-105		11/14/18 09:25	11/14/18 18:50	HLM
Wet Chemistry Analysis									
Percent Solids	05	SM18 2540G	78.4 %		0.10	1	11/14/18 12:48	11/14/18 12:48	PMP



## **Certificate of Analysis**

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02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

Sample I.D. 4-6

**Laboratory Sample ID:** 

18K0387-06

Grab Date/Time:

11/06/2018 14:30

Field Residual CI:

Parameter	Samp ID	Method	Result	Qual	Reporting Limit	D.F.	Sample Prep Date/Time	Analysis Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	06	SW8082A	<0.128 mg/kg dry		0.128	1	11/14/18 09:25	11/14/18 19:09	HLM
PCB as Aroclor 1221	06	SW8082A	<0.128 mg/kg dry		0.128	1	11/14/18 09:25	11/14/18 19:09	HLM
PCB as Aroclor 1232	06	SW8082A	<0.128 mg/kg dry		0.128	1	11/14/18 09:25	11/14/18 19:09	HLM
PCB as Aroclor 1242	06	SW8082A	<0.128 mg/kg dry		0.128	1	11/14/18 09:25	11/14/18 19:09	HLM
PCB as Aroclor 1248	06	SW8082A	<0.128 mg/kg dry		0.128	1	11/14/18 09:25	11/14/18 19:09	HLM
PCB as Aroclor 1254	06	SW8082A	<0.128 mg/kg dry		0.128	1	11/14/18 09:25	11/14/18 19:09	HLM
PCB as Aroclor 1260	06	SW8082A	<0.128 mg/kg dry		0.128	1	11/14/18 09:25	11/14/18 19:09	HLM
Surr: DCB	06	SW8082A	62.5 %		30-105		11/14/18 09:25	11/14/18 19:09	HLM
Surr: TCMX	06	SW8082A	60.0 %		30-105		11/14/18 09:25	11/14/18 19:09	HLM
Wet Chemistry Analysis									
Percent Solids	06	SM18 2540G	76.7 %		0.10	1	11/14/18 12:48	11/14/18 12:48	PMP



## **Certificate of Analysis**

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Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

Sample I.D. 5-1

Laboratory Sample ID: 18K0387-07

**Grab Date/Time:** 11/01/2018 12:10

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	07	SW8082A	<0.122 mg/kg dry		0.122	1	11/14/18 09:25	11/14/18 19:27	HLM
PCB as Aroclor 1221	07	SW8082A	<0.122 mg/kg dry		0.122	1	11/14/18 09:25	11/14/18 19:27	HLM
PCB as Aroclor 1232	07	SW8082A	<0.122 mg/kg dry		0.122	1	11/14/18 09:25	11/14/18 19:27	HLM
PCB as Aroclor 1242	07	SW8082A	<0.122 mg/kg dry		0.122	1	11/14/18 09:25	11/14/18 19:27	HLM
PCB as Aroclor 1248	07RE1	SW8082A	0.032 mg/kg dry		0.024	1	11/14/18 09:25	11/15/18 12:41	HLM
PCB as Aroclor 1254	07	SW8082A	<0.122 mg/kg dry		0.122	1	11/14/18 09:25	11/14/18 19:27	HLM
PCB as Aroclor 1260	07	SW8082A	<0.122 mg/kg dry		0.122	1	11/14/18 09:25	11/14/18 19:27	HLM
Surr: DCB	07	SW8082A	57.5 %		30-105		11/14/18 09:25	11/14/18 19:27	HLM
Surr: TCMX	07	SW8082A	57.5 %		30-105	i	11/14/18 09:25	11/14/18 19:27	HLM
Wet Chemistry Analysis									
Percent Solids	07	SM18 2540G	78.5 %		0.10	1	11/14/18 12:48	11/14/18 12:48	PMP



## **Certificate of Analysis**

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Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

Sample I.D. 5-2 Laboratory Sample ID: 18K0387-08

**Grab Date/Time:** 11/01/2018 12:40

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	08	SW8082A	<0.114 mg/kg dry		0.114	1	11/14/18 09:25	11/14/18 19:46	HLM
PCB as Aroclor 1221	80	SW8082A	<0.114 mg/kg dry		0.114	1	11/14/18 09:25	11/14/18 19:46	HLM
PCB as Aroclor 1232	80	SW8082A	<0.114 mg/kg dry		0.114	1	11/14/18 09:25	11/14/18 19:46	HLM
PCB as Aroclor 1242	80	SW8082A	<0.114 mg/kg dry		0.114	1	11/14/18 09:25	11/14/18 19:46	HLM
PCB as Aroclor 1248	08RE1	SW8082A	0.166 mg/kg dry		0.114	1	11/14/18 09:25	11/15/18 13:03	HLM
PCB as Aroclor 1254	80	SW8082A	<0.114 mg/kg dry		0.114	1	11/14/18 09:25	11/14/18 19:46	HLM
PCB as Aroclor 1260	80	SW8082A	<0.114 mg/kg dry		0.114	1	11/14/18 09:25	11/14/18 19:46	HLM
Surr: DCB	08	SW8082A	55.0 %		30-105		11/14/18 09:25	11/14/18 19:46	HLM
Surr: TCMX	08	SW8082A	65.0 %		30-105		11/14/18 09:25	11/14/18 19:46	HLM
Wet Chemistry Analysis									
Percent Solids	08	SM18 2540G	79.0 %		0.10	1	11/14/18 12:48	11/14/18 12:48	PMP



## **Certificate of Analysis**

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Reston VA, 20190

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Project Number: 02204085.00

Client Site I.D.: ARC - Gainesville, VA Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

Sample I.D. 5-3 Laboratory Sample ID: 18K0387-09

**Grab Date/Time:** 11/01/2018 12:55

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	09	SW8082A	<0.100 mg/kg dry		0.100	1	11/14/18 09:25	11/14/18 20:04	HLM
PCB as Aroclor 1221	09	SW8082A	<0.100 mg/kg dry		0.100	1	11/14/18 09:25	11/14/18 20:04	HLM
PCB as Aroclor 1232	09	SW8082A	<0.100 mg/kg dry		0.100	1	11/14/18 09:25	11/14/18 20:04	HLM
PCB as Aroclor 1242	09	SW8082A	<0.100 mg/kg dry		0.100	1	11/14/18 09:25	11/14/18 20:04	HLM
PCB as Aroclor 1248	09RE1	SW8082A	0.630 mg/kg dry		0.485	10	11/14/18 09:25	11/15/18 13:24	HLM
PCB as Aroclor 1254	09	SW8082A	<0.100 mg/kg dry		0.100	1	11/14/18 09:25	11/14/18 20:04	HLM
PCB as Aroclor 1260	09	SW8082A	<0.100 mg/kg dry		0.100	1	11/14/18 09:25	11/14/18 20:04	HLM
Surr: DCB	09	SW8082A	62.5 %		30-105		11/14/18 09:25	11/14/18 20:04	HLM
Surr: TCMX	09	SW8082A	75.0 %		30-105		11/14/18 09:25	11/14/18 20:04	HLM
Wet Chemistry Analysis									
Percent Solids	09	SM18 2540G	90.2 %		0.10	1	11/14/18 12:48	11/14/18 12:48	PMP



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number: 02204085.00

Client Site I.D.: ARC - Gainesville, VA Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

Sample I.D. 5-4 Laboratory Sample ID: 18K0387-10

**Grab Date/Time:** 11/01/2018 10:30

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							_
PCB as Aroclor 1016	10	SW8082A	<0.182 mg/kg dry		0.182	1	11/14/18 09:25	11/14/18 20:23	HLM
PCB as Aroclor 1221	10	SW8082A	<0.182 mg/kg dry		0.182	1	11/14/18 09:25	11/14/18 20:23	HLM
PCB as Aroclor 1232	10	SW8082A	<0.182 mg/kg dry		0.182	1	11/14/18 09:25	11/14/18 20:23	HLM
PCB as Aroclor 1242	10	SW8082A	<0.182 mg/kg dry		0.182	1	11/14/18 09:25	11/14/18 20:23	HLM
PCB as Aroclor 1248	10RE1	SW8082A	1.32 mg/kg dry		0.910	5	11/14/18 09:25	11/15/18 13:46	HLM
PCB as Aroclor 1254	10	SW8082A	<0.182 mg/kg dry		0.182	1	11/14/18 09:25	11/14/18 20:23	HLM
PCB as Aroclor 1260	10	SW8082A	<0.182 mg/kg dry		0.182	1	11/14/18 09:25	11/14/18 20:23	HLM
Surr: DCB	10	SW8082A	17.5 %	S	30-105		11/14/18 09:25	11/14/18 20:23	HLM
Surr: TCMX	10	SW8082A	25.0 %	S	30-105		11/14/18 09:25	11/14/18 20:23	HLM
Wet Chemistry Analysis									
Percent Solids	10	SM18 2540G	53.2 %		0.10	1	11/14/18 12:48	11/14/18 12:48	PMP



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number: 02204085.00

Client Site I.D.: ARC - Gainesville, VA Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

Sample I.D. 5-5 Laboratory Sample ID: 18K0387-11

**Grab Date/Time:** 11/01/2018 10:40

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	11	SW8082A	<0.132 mg/kg dry		0.132	1	11/14/18 09:25	11/14/18 20:41	HLM
PCB as Aroclor 1221	11	SW8082A	<0.132 mg/kg dry		0.132	1	11/14/18 09:25	11/14/18 20:41	HLM
PCB as Aroclor 1232	11	SW8082A	<0.132 mg/kg dry		0.132	1	11/14/18 09:25	11/14/18 20:41	HLM
PCB as Aroclor 1242	11	SW8082A	<0.132 mg/kg dry		0.132	1	11/14/18 09:25	11/14/18 20:41	HLM
PCB as Aroclor 1248	11RE1	SW8082A	0.207 mg/kg dry		0.132	1	11/14/18 09:25	11/15/18 14:07	HLM
PCB as Aroclor 1254	11	SW8082A	<0.132 mg/kg dry		0.132	1	11/14/18 09:25	11/14/18 20:41	HLM
PCB as Aroclor 1260	11	SW8082A	<0.132 mg/kg dry		0.132	1	11/14/18 09:25	11/14/18 20:41	HLM
Surr: DCB	11	SW8082A	57.5 %		30-105	; ;	11/14/18 09:25	11/14/18 20:41	HLM
Surr: TCMX	11	SW8082A	60.0 %		30-105	5	11/14/18 09:25	11/14/18 20:41	HLM
Wet Chemistry Analysis									
Percent Solids	11	SM18 2540G	74.8 %		0.10	1	11/14/18 12:48	11/14/18 12:48	PMP



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2

11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number:

02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

**Sample I.D.** 5-6 **Laboratory Sample ID**: 18K0387-12

**Grab Date/Time:** 11/01/2018 10:50

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	12	SW8082A	<0.114 mg/kg dry		0.114	1	11/14/18 09:25	11/14/18 21:00	HLM
PCB as Aroclor 1221	12	SW8082A	<0.114 mg/kg dry		0.114	1	11/14/18 09:25	11/14/18 21:00	HLM
PCB as Aroclor 1232	12	SW8082A	<0.114 mg/kg dry		0.114	1	11/14/18 09:25	11/14/18 21:00	HLM
PCB as Aroclor 1242	12	SW8082A	<0.114 mg/kg dry		0.114	1	11/14/18 09:25	11/14/18 21:00	HLM
PCB as Aroclor 1248	12RE1	SW8082A	0.057 mg/kg dry		0.023	1	11/14/18 09:25	11/15/18 14:28	HLM
PCB as Aroclor 1254	12	SW8082A	<0.114 mg/kg dry		0.114	1	11/14/18 09:25	11/14/18 21:00	HLM
PCB as Aroclor 1260	12	SW8082A	<0.114 mg/kg dry		0.114	1	11/14/18 09:25	11/14/18 21:00	HLM
Surr: DCB	12	SW8082A	72.5 %		30-105	5	11/14/18 09:25	11/14/18 21:00	HLM
Surr: TCMX	12	SW8082A	82.5 %		30-105	5	11/14/18 09:25	11/14/18 21:00	HLM
Wet Chemistry Analysis									
Percent Solids	12	SM18 2540G	86.1 %		0.10	1	11/14/18 12:48	11/14/18 12:48	PMP



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston Date Issued: 11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: **Austin Drooger** 

Project Number:

02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

Sample I.D.

**Laboratory Sample ID:** 

18K0387-13

Grab Date/Time:

11/01/2018 11:00

Field Residual CI:

Reporting				
		Sample Prep	Analysis	
Limit	D.F.	Date/Time	Date/Time	Analyst
0.122	1	11/14/18 09:25	11/14/18 21:18	HLM
0.122	1	11/14/18 09:25	11/14/18 21:18	HLM
0.122	1	11/14/18 09:25	11/14/18 21:18	HLM
0.122	1	11/14/18 09:25	11/14/18 21:18	HLM
0.122	1	11/14/18 09:25	11/14/18 21:18	HLM
0.122	1	11/14/18 09:25	11/14/18 21:18	HLM
0.122	1	11/14/18 09:25	11/14/18 21:18	HLM
30-105		11/14/18 09:25	11/14/18 21:18	HLM
30-105		11/14/18 09:25	11/14/18 21:18	HLM
0.10	1	11/14/18 12:48	11/14/18 12:48	PMP
	0.122 0.122 0.122 0.122 0.122 0.122 0.122 30-105	0.122 1 0.122 1 0.122 1 0.122 1 0.122 1 0.122 1 0.122 1 30-105 30-105	0.122       1       11/14/18 09:25         0.122       1       11/14/18 09:25         0.122       1       11/14/18 09:25         0.122       1       11/14/18 09:25         0.122       1       11/14/18 09:25         0.122       1       11/14/18 09:25         30-105       11/14/18 09:25         30-105       11/14/18 09:25	0.122       1       11/14/18 09:25       11/14/18 21:18         0.122       1       11/14/18 09:25       11/14/18 21:18         0.122       1       11/14/18 09:25       11/14/18 21:18         0.122       1       11/14/18 09:25       11/14/18 21:18         0.122       1       11/14/18 09:25       11/14/18 21:18         0.122       1       11/14/18 09:25       11/14/18 21:18         30-105       11/14/18 09:25       11/14/18 21:18         30-105       11/14/18 09:25       11/14/18 21:18



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued:

11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number:

02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

Sample I.D. 5-8

Laboratory Sample ID: 18K0387-14

**Grab Date/Time:** 11/01/2018 11:20

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	s and PCBs	by GC/ECD							
PCB as Aroclor 1016	14	SW8082A	<0.125 mg/kg dry		0.125	1	11/14/18 09:25	11/14/18 21:37	HLM
PCB as Aroclor 1221	14	SW8082A	<0.125 mg/kg dry		0.125	1	11/14/18 09:25	11/14/18 21:37	HLM
PCB as Aroclor 1232	14	SW8082A	<0.125 mg/kg dry		0.125	1	11/14/18 09:25	11/14/18 21:37	HLM
PCB as Aroclor 1242	14	SW8082A	<0.125 mg/kg dry		0.125	1	11/14/18 09:25	11/14/18 21:37	HLM
PCB as Aroclor 1248	14	SW8082A	<0.125 mg/kg dry		0.125	1	11/14/18 09:25	11/14/18 21:37	HLM
PCB as Aroclor 1254	14	SW8082A	<0.125 mg/kg dry		0.125	1	11/14/18 09:25	11/14/18 21:37	HLM
PCB as Aroclor 1260	14	SW8082A	<0.125 mg/kg dry		0.125	1	11/14/18 09:25	11/14/18 21:37	HLM
Surr: DCB	14	SW8082A	42.5 %		30-105	5	11/14/18 09:25	11/14/18 21:37	HLM
Surr: TCMX	14	SW8082A	50.0 %		30-105	5	11/14/18 09:25	11/14/18 21:37	HLM
Wet Chemistry Analysis									
Percent Solids	14	SM18 2540G	78.3 %		0.10	1	11/14/18 12:48	11/14/18 12:48	PMP



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number: 02204085.00

Client Site I.D.: ARC - Gainesville, VA Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

 Sample I.D.
 5-9
 Laboratory Sample ID:
 18K0387-15

**Grab Date/Time:** 11/01/2018 11:40

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	15	SW8082A	<0.119 mg/kg dry		0.119	1	11/14/18 09:25	11/14/18 21:55	HLM
PCB as Aroclor 1221	15	SW8082A	<0.119 mg/kg dry		0.119	1	11/14/18 09:25	11/14/18 21:55	HLM
PCB as Aroclor 1232	15	SW8082A	<0.119 mg/kg dry		0.119	1	11/14/18 09:25	11/14/18 21:55	HLM
PCB as Aroclor 1242	15	SW8082A	<0.119 mg/kg dry		0.119	1	11/14/18 09:25	11/14/18 21:55	HLM
PCB as Aroclor 1248	15	SW8082A	<0.119 mg/kg dry		0.119	1	11/14/18 09:25	11/14/18 21:55	HLM
PCB as Aroclor 1254	15RE1	SW8082A	0.159 mg/kg dry		0.099	5	11/14/18 09:25	11/15/18 14:50	HLM
PCB as Aroclor 1260	15	SW8082A	<0.119 mg/kg dry		0.119	1	11/14/18 09:25	11/14/18 21:55	HLM
Surr: DCB	15	SW8082A	50.0 %		30-105	5	11/14/18 09:25	11/14/18 21:55	HLM
Surr: TCMX	15	SW8082A	72.5 %		30-105	5	11/14/18 09:25	11/14/18 21:55	HLM
Wet Chemistry Analysis									
Percent Solids	15	SM18 2540G	77.1 %		0.10	1	11/14/18 12:48	11/14/18 12:48	PMP



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number: 02204085.00

Client Site I.D.: ARC - Gainesville, VA Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

 Sample I.D.
 5-10
 Laboratory Sample ID:
 18K0387-16

**Grab Date/Time:** 11/01/2018 11:40

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	16	SW8082A	<0.131 mg/kg dry		0.131	1	11/14/18 09:25	11/14/18 22:14	HLM
PCB as Aroclor 1221	16	SW8082A	<0.131 mg/kg dry		0.131	1	11/14/18 09:25	11/14/18 22:14	HLM
PCB as Aroclor 1232	16	SW8082A	<0.131 mg/kg dry		0.131	1	11/14/18 09:25	11/14/18 22:14	HLM
PCB as Aroclor 1242	16	SW8082A	<0.131 mg/kg dry		0.131	1	11/14/18 09:25	11/14/18 22:14	HLM
PCB as Aroclor 1248	16	SW8082A	<0.131 mg/kg dry		0.131	1	11/14/18 09:25	11/14/18 22:14	HLM
PCB as Aroclor 1254	16	SW8082A	<0.131 mg/kg dry		0.131	1	11/14/18 09:25	11/14/18 22:14	HLM
PCB as Aroclor 1260	16	SW8082A	<0.131 mg/kg dry		0.131	1	11/14/18 09:25	11/14/18 22:14	HLM
Surr: DCB	16	SW8082A	55.0 %		30-105	;	11/14/18 09:25	11/14/18 22:14	HLM
Surr: TCMX	16	SW8082A	55.0 %		30-105	i	11/14/18 09:25	11/14/18 22:14	HLM
Wet Chemistry Analysis									
Percent Solids	16	SM18 2540G	75.9 %		0.10	1	11/14/18 12:48	11/14/18 12:48	PMP



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number: 02204085.00

Client Site I.D.: ARC - Gainesville, VA Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

Sample I.D. 5-11 Laboratory Sample ID: 18K0387-17

**Grab Date/Time:** 11/01/2018 11:50

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	17	SW8082A	<0.118 mg/kg dry		0.118	1	11/14/18 09:25	11/14/18 22:32	HLM
PCB as Aroclor 1221	17	SW8082A	<0.118 mg/kg dry		0.118	1	11/14/18 09:25	11/14/18 22:32	HLM
PCB as Aroclor 1232	17	SW8082A	<0.118 mg/kg dry		0.118	1	11/14/18 09:25	11/14/18 22:32	HLM
PCB as Aroclor 1242	17	SW8082A	<0.118 mg/kg dry		0.118	1	11/14/18 09:25	11/14/18 22:32	HLM
PCB as Aroclor 1248	17	SW8082A	<0.118 mg/kg dry		0.118	1	11/14/18 09:25	11/14/18 22:32	HLM
PCB as Aroclor 1254	17	SW8082A	<0.118 mg/kg dry		0.118	1	11/14/18 09:25	11/14/18 22:32	HLM
PCB as Aroclor 1260	17	SW8082A	<0.118 mg/kg dry		0.118	1	11/14/18 09:25	11/14/18 22:32	HLM
Surr: DCB	17	SW8082A	55.0 %		30-105	;	11/14/18 09:25	11/14/18 22:32	HLM
Surr: TCMX	17	SW8082A	65.0 %		30-105	i	11/14/18 09:25	11/14/18 22:32	HLM
Wet Chemistry Analysis									
Percent Solids	17	SM18 2540G	82.9 %		0.10	1	11/14/18 12:48	11/14/18 12:48	PMP



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number: 02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

Sample I.D. 6-1 Laboratory Sample ID: 18K0387-18

**Grab Date/Time:** 11/02/2018 09:00

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	18	SW8082A	<0.129 mg/kg dry		0.129	1	11/14/18 09:25	11/14/18 22:51	HLM
PCB as Aroclor 1221	18	SW8082A	<0.129 mg/kg dry		0.129	1	11/14/18 09:25	11/14/18 22:51	HLM
PCB as Aroclor 1232	18	SW8082A	<0.129 mg/kg dry		0.129	1	11/14/18 09:25	11/14/18 22:51	HLM
PCB as Aroclor 1242	18	SW8082A	<0.129 mg/kg dry		0.129	1	11/14/18 09:25	11/14/18 22:51	HLM
PCB as Aroclor 1248	18RE1	SW8082A	1.16 mg/kg dry		0.643	10	11/14/18 09:25	11/15/18 15:11	HLM
PCB as Aroclor 1254	18	SW8082A	<0.129 mg/kg dry		0.129	1	11/14/18 09:25	11/14/18 22:51	HLM
PCB as Aroclor 1260	18	SW8082A	<0.129 mg/kg dry		0.129	1	11/14/18 09:25	11/14/18 22:51	HLM
Surr: DCB	18	SW8082A	50.0 %		30-105		11/14/18 09:25	11/14/18 22:51	HLM
Surr: TCMX	18	SW8082A	55.0 %		30-105		11/14/18 09:25	11/14/18 22:51	HLM
Wet Chemistry Analysis									
Percent Solids	18	SM18 2540G	75.0 %		0.10	1	11/14/18 12:48	11/14/18 12:48	PMP



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number: 02204085.00

Client Site I.D.: ARC - Gainesville, VA Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

 Sample I.D.
 6-2
 Laboratory Sample ID:
 18K0387-19

**Grab Date/Time:** 11/02/2018 09:30

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	19	SW8082A	<0.129 mg/kg dry		0.129	1	11/14/18 12:20	11/15/18 00:42	HLM
PCB as Aroclor 1221	19	SW8082A	<0.129 mg/kg dry		0.129	1	11/14/18 12:20	11/15/18 00:42	HLM
PCB as Aroclor 1232	19	SW8082A	<0.129 mg/kg dry		0.129	1	11/14/18 12:20	11/15/18 00:42	HLM
PCB as Aroclor 1242	19	SW8082A	<0.129 mg/kg dry		0.129	1	11/14/18 12:20	11/15/18 00:42	HLM
PCB as Aroclor 1248	19	SW8082A	<0.129 mg/kg dry		0.129	1	11/14/18 12:20	11/15/18 00:42	HLM
PCB as Aroclor 1254	19	SW8082A	<0.129 mg/kg dry		0.129	1	11/14/18 12:20	11/15/18 00:42	HLM
PCB as Aroclor 1260	19	SW8082A	<0.129 mg/kg dry		0.129	1	11/14/18 12:20	11/15/18 00:42	HLM
Surr: DCB	19	SW8082A	57.5 %		30-105	;	11/14/18 12:20	11/15/18 00:42	HLM
Surr: TCMX	19	SW8082A	50.0 %		30-105	i	11/14/18 12:20	11/15/18 00:42	HLM
Wet Chemistry Analysis									
Percent Solids	19	SM18 2540G	74.6 %		0.10	1	11/14/18 12:48	11/14/18 12:48	PMP



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued:

11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number:

02204085.00

18K0387-20

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

Sample I.D. 6-3

11/02/2018 09:45

Grab Date/Time: Field Residual CI:

Field pH:

**Laboratory Sample ID:** 

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	s and PCBs	by GC/ECD							
PCB as Aroclor 1016	20	SW8082A	<0.146 mg/kg dry		0.146	1	11/14/18 12:20	11/15/18 01:00	HLM
PCB as Aroclor 1221	20	SW8082A	<0.146 mg/kg dry		0.146	1	11/14/18 12:20	11/15/18 01:00	HLM
PCB as Aroclor 1232	20	SW8082A	<0.146 mg/kg dry		0.146	1	11/14/18 12:20	11/15/18 01:00	HLM
PCB as Aroclor 1242	20	SW8082A	<0.146 mg/kg dry		0.146	1	11/14/18 12:20	11/15/18 01:00	HLM
PCB as Aroclor 1248	20RE1	SW8082A	0.056 mg/kg dry		0.029	1	11/14/18 12:20	11/15/18 15:33	HLM
PCB as Aroclor 1254	20	SW8082A	<0.146 mg/kg dry		0.146	1	11/14/18 12:20	11/15/18 01:00	HLM
PCB as Aroclor 1260	20	SW8082A	<0.146 mg/kg dry		0.146	1	11/14/18 12:20	11/15/18 01:00	HLM
Surr: DCB	20	SW8082A	30.0 %		30-105		11/14/18 12:20	11/15/18 01:00	HLM
Surr: TCMX	20	SW8082A	42.5 %		30-105		11/14/18 12:20	11/15/18 01:00	HLM
Wet Chemistry Analysis									
Percent Solids	20	SM18 2540G	66.7 %		0.10	1	11/14/18 12:48	11/14/18 12:48	PMP



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number: 02204085.00

Client Site I.D.: ARC - Gainesville, VA Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

Sample I.D. 6-4 Laboratory Sample ID: 18K0387-21

**Grab Date/Time:** 11/02/2018 09:55

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	21	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 01:19	HLM
PCB as Aroclor 1221	21	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 01:19	HLM
PCB as Aroclor 1232	21	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 01:19	HLM
PCB as Aroclor 1242	21	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 01:19	HLM
PCB as Aroclor 1248	21	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 01:19	HLM
PCB as Aroclor 1254	21	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 01:19	HLM
PCB as Aroclor 1260	21	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 01:19	HLM
Surr: DCB	21	SW8082A	60.0 %		30-105		11/14/18 12:20	11/15/18 01:19	HLM
Surr: TCMX	21	SW8082A	52.5 %		30-105		11/14/18 12:20	11/15/18 01:19	HLM
Wet Chemistry Analysis									
Percent Solids	21	SM18 2540G	76.3 %		0.10	1	11/14/18 12:48	11/14/18 12:48	PMP



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

11/02/2018 10:15

Reston VA, 20190

Submitted To: Austin Drooger

Project Number: 0220

02204085.00

18K0387-22

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

Sample I.D. 6-5

Laboratory Sample ID:

Grab Date/Time: Field Residual CI:

Parameter	Samp ID	Method	Result	Qual	Reporting Limit	D.F.	Sample Prep Date/Time	Analysis Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	22	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 01:37	HLM
PCB as Aroclor 1221	22	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 01:37	HLM
PCB as Aroclor 1232	22	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 01:37	HLM
PCB as Aroclor 1242	22	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 01:37	HLM
PCB as Aroclor 1248	22	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 01:37	HLM
PCB as Aroclor 1254	22	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 01:37	HLM
PCB as Aroclor 1260	22	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 01:37	HLM
Surr: DCB	22	SW8082A	80.0 %		30-105	; ;	11/14/18 12:20	11/15/18 01:37	HLM
Surr: TCMX	22	SW8082A	57.5 %		30-105	5	11/14/18 12:20	11/15/18 01:37	HLM
Wet Chemistry Analysis									
Percent Solids	22	SM18 2540G	78.9 %		0.10	1	11/13/18 15:50	11/13/18 15:50	RLM



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number: 02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

Sample I.D. 6-6 Laboratory Sample ID: 18K0387-23

**Grab Date/Time:** 11/02/2018 10:30

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	23	SW8082A	<0.112 mg/kg dry		0.112	1	11/14/18 12:20	11/15/18 01:56	HLM
PCB as Aroclor 1221	23	SW8082A	<0.112 mg/kg dry		0.112	1	11/14/18 12:20	11/15/18 01:56	HLM
PCB as Aroclor 1232	23	SW8082A	<0.112 mg/kg dry		0.112	1	11/14/18 12:20	11/15/18 01:56	HLM
PCB as Aroclor 1242	23	SW8082A	<0.112 mg/kg dry		0.112	1	11/14/18 12:20	11/15/18 01:56	HLM
PCB as Aroclor 1248	23	SW8082A	<0.112 mg/kg dry		0.112	1	11/14/18 12:20	11/15/18 01:56	HLM
PCB as Aroclor 1254	23	SW8082A	<0.112 mg/kg dry		0.112	1	11/14/18 12:20	11/15/18 01:56	HLM
PCB as Aroclor 1260	23	SW8082A	<0.112 mg/kg dry		0.112	1	11/14/18 12:20	11/15/18 01:56	HLM
Surr: DCB	23	SW8082A	65.0 %		30-105	;	11/14/18 12:20	11/15/18 01:56	HLM
Surr: TCMX	23	SW8082A	62.5 %		30-105	i	11/14/18 12:20	11/15/18 01:56	HLM
Wet Chemistry Analysis									
Percent Solids	23	SM18 2540G	87.0 %		0.10	1	11/13/18 15:50	11/13/18 15:50	RLM



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15

**Laboratory Sample ID:** 

11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number:

02204085.00

18K0387-24

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

Sample I.D. 6-7

11/02/2018 10:40

Grab Date/Time: Field Residual CI:

Parameter	Samp ID	Method	Result	Qual	Reporting Limit	D.F.	Sample Prep Date/Time	Analysis Date/Time	Analyst
r ai ai i i e te i	Sallip ID	ivietnoa		Quai		D.I .	Bato, Time	Bate, Time	Allalysi
Organochlorine Pesticides	s and PCBs	by GC/ECD							
PCB as Aroclor 1016	24	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 02:14	HLM
PCB as Aroclor 1221	24	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 02:14	HLM
PCB as Aroclor 1232	24	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 02:14	HLM
PCB as Aroclor 1242	24	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 02:14	HLM
PCB as Aroclor 1248	24	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 02:14	HLM
PCB as Aroclor 1254	24	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 02:14	HLM
PCB as Aroclor 1260	24	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 02:14	HLM
Surr: DCB	24	SW8082A	65.0 %		30-105	5	11/14/18 12:20	11/15/18 02:14	HLM
Surr: TCMX	24	SW8082A	50.0 %		30-105	5	11/14/18 12:20	11/15/18 02:14	HLM
Wet Chemistry Analysis									
Percent Solids	24	SM18 2540G	75.7 %		0.10	1	11/13/18 15:50	11/13/18 15:50	RLM



### **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/

**Laboratory Sample ID:** 

11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number:

02204085.00

18K0387-25

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

**Grab Date/Time:** 

**Sample I.D.** 6-8

Field Residual CI: Field pH:

11/02/2018 11:00

Reporting Sample Prep Analysis Limit Date/Time Date/Time Parameter Samp ID Method Result Qual D.F. Analyst Organochlorine Pesticides and PCBs by GC/ECD PCB as Aroclor 1016 25 SW8082A <0.143 mg/kg dry 0.143 11/14/18 12:20 11/15/18 02:33 HLM PCB as Aroclor 1221 25 SW8082A <0.143 mg/kg dry 0.143 11/14/18 12:20 11/15/18 02:33 HLM PCB as Aroclor 1232 25 SW8082A <0.143 mg/kg dry 0.143 11/14/18 12:20 11/15/18 02:33 HLM PCB as Aroclor 1242 25 SW8082A <0.143 mg/kg dry 0.143 HLM 1 11/14/18 12:20 11/15/18 02:33 PCB as Aroclor 1248 25 SW8082A <0.143 mg/kg dry 0.143 11/14/18 12:20 11/15/18 02:33 HLM 1 PCB as Aroclor 1254 25 SW8082A <0.143 mg/kg dry 0.143 11/14/18 12:20 11/15/18 02:33 HLM PCB as Aroclor 1260 25 SW8082A <0.143 mg/kg dry 0.143 11/14/18 12:20 11/15/18 02:33 HLM 11/15/18 02:33 25 Surr: DCB SW8082A 60.0 % 30-105 11/14/18 12:20 HLM 25 SW8082A 50.0 % 30-105 11/15/18 02:33 HLM Surr: TCMX 11/14/18 12:20 Wet Chemistry Analysis **Percent Solids** 25 SM18 2540G 0.10 11/13/18 15:50 11/13/18 15:50 **RLM** 68.5 %



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number: 02204085.00

Client Site I.D.: ARC - Gainesville, VA Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

 Sample I.D.
 6-9
 Laboratory Sample ID:
 18K0387-26

**Grab Date/Time:** 11/02/2018 11:20

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	26	SW8082A	<0.122 mg/kg dry		0.122	1	11/14/18 12:20	11/15/18 02:51	HLM
PCB as Aroclor 1221	26	SW8082A	<0.122 mg/kg dry		0.122	1	11/14/18 12:20	11/15/18 02:51	HLM
PCB as Aroclor 1232	26	SW8082A	<0.122 mg/kg dry		0.122	1	11/14/18 12:20	11/15/18 02:51	HLM
PCB as Aroclor 1242	26	SW8082A	<0.122 mg/kg dry		0.122	1	11/14/18 12:20	11/15/18 02:51	HLM
PCB as Aroclor 1248	26	SW8082A	<0.122 mg/kg dry		0.122	1	11/14/18 12:20	11/15/18 02:51	HLM
PCB as Aroclor 1254	26	SW8082A	<0.122 mg/kg dry		0.122	1	11/14/18 12:20	11/15/18 02:51	HLM
PCB as Aroclor 1260	26	SW8082A	<0.122 mg/kg dry		0.122	1	11/14/18 12:20	11/15/18 02:51	HLM
Surr: DCB	26	SW8082A	57.5 %		30-105	5	11/14/18 12:20	11/15/18 02:51	HLM
Surr: TCMX	26	SW8082A	62.5 %		30-105	5	11/14/18 12:20	11/15/18 02:51	HLM
Wet Chemistry Analysis									
Percent Solids	26	SM18 2540G	81.7 %		0.10	1	11/13/18 15:50	11/13/18 15:50	RLM



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued:

11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number:

02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

**Sample I.D.** 6-10

Laboratory Sample ID:

18K0387-27

Grab Date/Time:

11/02/2018 11:40

Field Residual CI:

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	s and PCBs	by GC/ECD							
PCB as Aroclor 1016	27	SW8082A	<0.140 mg/kg dry		0.140	1	11/14/18 12:20	11/15/18 03:10	HLM
PCB as Aroclor 1221	27	SW8082A	<0.140 mg/kg dry		0.140	1	11/14/18 12:20	11/15/18 03:10	HLM
PCB as Aroclor 1232	27	SW8082A	<0.140 mg/kg dry		0.140	1	11/14/18 12:20	11/15/18 03:10	HLM
PCB as Aroclor 1242	27	SW8082A	<0.140 mg/kg dry		0.140	1	11/14/18 12:20	11/15/18 03:10	HLM
PCB as Aroclor 1248	27RE1	SW8082A	3.74 mg/kg dry		2.34	100	11/14/18 12:20	11/15/18 15:54	HLM
PCB as Aroclor 1254	27	SW8082A	<0.140 mg/kg dry		0.140	1	11/14/18 12:20	11/15/18 03:10	HLM
PCB as Aroclor 1260	27	SW8082A	<0.140 mg/kg dry		0.140	1	11/14/18 12:20	11/15/18 03:10	HLM
Surr: DCB	27	SW8082A	32.5 %		30-105		11/14/18 12:20	11/15/18 03:10	HLM
Surr: TCMX	27	SW8082A	40.0 %		30-105		11/14/18 12:20	11/15/18 03:10	HLM
Wet Chemistry Analysis									
Percent Solids	27	SM18 2540G	70.6 %		0.10	1	11/13/18 15:50	11/13/18 15:50	RLM



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued:

11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number:

02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

Sample I.D. 6-11

Laboratory Sample ID:

18K0387-28

Grab Date/Time:

11/02/2018 12:00

Field Residual CI:

					•				
					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	s and PCBs	by GC/ECD							
PCB as Aroclor 1016	28	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 03:28	HLM
PCB as Aroclor 1221	28	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 03:28	HLM
PCB as Aroclor 1232	28	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 03:28	HLM
PCB as Aroclor 1242	28	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 03:28	HLM
PCB as Aroclor 1248	28	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 03:28	HLM
PCB as Aroclor 1254	28	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 03:28	HLM
PCB as Aroclor 1260	28	SW8082A	<0.126 mg/kg dry		0.126	1	11/14/18 12:20	11/15/18 03:28	HLM
Surr: DCB	28	SW8082A	42.5 %		30-105	;	11/14/18 12:20	11/15/18 03:28	HLM
Surr: TCMX	28	SW8082A	45.0 %		30-105	i	11/14/18 12:20	11/15/18 03:28	HLM
Wet Chemistry Analysis									
Percent Solids	28	SM18 2540G	78.9 %		0.10	1	11/13/18 15:50	11/13/18 15:50	RLM



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued:

11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number:

02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

**Sample I.D.** 6-12

Laboratory Sample ID:

18K0387-29

Grab Date/Time:

11/02/2018 12:15

Field Residual CI:

					•				
					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	s and PCBs	by GC/ECD							
PCB as Aroclor 1016	29	SW8082A	<0.130 mg/kg dry		0.130	1	11/14/18 12:20	11/15/18 03:47	HLM
PCB as Aroclor 1221	29	SW8082A	<0.130 mg/kg dry		0.130	1	11/14/18 12:20	11/15/18 03:47	HLM
PCB as Aroclor 1232	29	SW8082A	<0.130 mg/kg dry		0.130	1	11/14/18 12:20	11/15/18 03:47	HLM
PCB as Aroclor 1242	29	SW8082A	<0.130 mg/kg dry		0.130	1	11/14/18 12:20	11/15/18 03:47	HLM
PCB as Aroclor 1248	29	SW8082A	<0.130 mg/kg dry		0.130	1	11/14/18 12:20	11/15/18 03:47	HLM
PCB as Aroclor 1254	29RE1	SW8082A	0.823 mg/kg dry		0.433	20	11/14/18 12:20	11/15/18 16:37	HLM
PCB as Aroclor 1260	29	SW8082A	<0.130 mg/kg dry		0.130	1	11/14/18 12:20	11/15/18 03:47	HLM
Surr: DCB	29	SW8082A	57.5 %		30-105		11/14/18 12:20	11/15/18 03:47	HLM
Surr: TCMX	29	SW8082A	72.5 %		30-105		11/14/18 12:20	11/15/18 03:47	HLM
Wet Chemistry Analysis									
Percent Solids	29	SM18 2540G	76.2 %		0.10	1	11/13/18 15:50	11/13/18 15:50	RLM



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15

11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number:

02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

**Sample I.D.** 6-13

Laboratory Sample ID:

18K0387-30

Grab Date/Time:

11/02/2018 12:30

Field Residual CI:

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticide	es and PCBs	by GC/ECD							
PCB as Aroclor 1016	30	SW8082A	<0.124 mg/kg dry		0.124	1	11/14/18 12:20	11/15/18 04:05	HLM
PCB as Aroclor 1221	30	SW8082A	<0.124 mg/kg dry		0.124	1	11/14/18 12:20	11/15/18 04:05	HLM
PCB as Aroclor 1232	30	SW8082A	<0.124 mg/kg dry		0.124	1	11/14/18 12:20	11/15/18 04:05	HLM
PCB as Aroclor 1242	30	SW8082A	<0.124 mg/kg dry		0.124	1	11/14/18 12:20	11/15/18 04:05	HLM
PCB as Aroclor 1248	30	SW8082A	<0.124 mg/kg dry		0.124	1	11/14/18 12:20	11/15/18 04:05	HLM
PCB as Aroclor 1254	30	SW8082A	<0.124 mg/kg dry		0.124	1	11/14/18 12:20	11/15/18 04:05	HLM
PCB as Aroclor 1260	30	SW8082A	<0.124 mg/kg dry		0.124	1	11/14/18 12:20	11/15/18 04:05	HLM
Surr: DCB	30	SW8082A	27.5 %	S	30-105		11/14/18 12:20	11/15/18 04:05	HLM
Surr: TCMX	30	SW8082A	40.0 %		30-105		11/14/18 12:20	11/15/18 04:05	HLM
Wet Chemistry Analysis									
Percent Solids	30	SM18 2540G	78.8 %		0.10	1	11/13/18 15:50	11/13/18 15:50	RLM



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued:

11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number:

02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

Sample I.D. 6-14

Laboratory Sample ID:

18K0387-31

Grab Date/Time:

11/02/2018 12:40

Field Residual CI:

Field pH:

					•				
					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	s and PCBs	by GC/ECD							
PCB as Aroclor 1016	31	SW8082A	<0.121 mg/kg dry		0.121	1	11/14/18 12:20	11/15/18 04:24	HLM
PCB as Aroclor 1221	31	SW8082A	<0.121 mg/kg dry		0.121	1	11/14/18 12:20	11/15/18 04:24	HLM
PCB as Aroclor 1232	31	SW8082A	<0.121 mg/kg dry		0.121	1	11/14/18 12:20	11/15/18 04:24	HLM
PCB as Aroclor 1242	31	SW8082A	<0.121 mg/kg dry		0.121	1	11/14/18 12:20	11/15/18 04:24	HLM
PCB as Aroclor 1248	31	SW8082A	<0.121 mg/kg dry		0.121	1	11/14/18 12:20	11/15/18 04:24	HLM
PCB as Aroclor 1254	31RE1	SW8082A	0.404 mg/kg dry		0.242	10	11/14/18 12:20	11/15/18 16:24	HLM
PCB as Aroclor 1260	31	SW8082A	<0.121 mg/kg dry		0.121	1	11/14/18 12:20	11/15/18 04:24	HLM
Surr: DCB	31	SW8082A	57.5 %		30-105		11/14/18 12:20	11/15/18 04:24	HLM
Surr: TCMX	31	SW8082A	67.5 %		30-105		11/14/18 12:20	11/15/18 04:24	HLM
Wet Chemistry Analysis									
Percent Solids	31	SM18 2540G	82.0 %		0.10	1	11/13/18 15:50	11/13/18 15:50	RLM



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/

11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number:

02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

**Sample I.D.** 6-15

Laboratory Sample ID: 18K0387-32

**Grab Date/Time:** 11/02/2018 12:50

Field Residual CI:

Field pH:

Parameter	Samp ID	Method	Result	Qual	Reporting Limit	D.F.	Sample Prep Date/Time	Analysis Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	32	SW8082A	<0.110 mg/kg dry		0.110	1	11/14/18 12:20	11/15/18 04:42	HLM
PCB as Aroclor 1221	32	SW8082A	<0.110 mg/kg dry		0.110	1	11/14/18 12:20	11/15/18 04:42	HLM
PCB as Aroclor 1232	32	SW8082A	<0.110 mg/kg dry		0.110	1	11/14/18 12:20	11/15/18 04:42	HLM
PCB as Aroclor 1242	32	SW8082A	<0.110 mg/kg dry		0.110	1	11/14/18 12:20	11/15/18 04:42	HLM
PCB as Aroclor 1248	32RE1	SW8082A	6.61 mg/kg dry		5.51	100	11/14/18 12:20	11/15/18 16:41	HLM
PCB as Aroclor 1254	32	SW8082A	<0.110 mg/kg dry		0.110	1	11/14/18 12:20	11/15/18 04:42	HLM
PCB as Aroclor 1260	32	SW8082A	<0.110 mg/kg dry		0.110	1	11/14/18 12:20	11/15/18 04:42	HLM
Surr: DCB	32	SW8082A	72.5 %		30-105		11/14/18 12:20	11/15/18 04:42	HLM
Surr: TCMX	32	SW8082A	82.5 %		30-105		11/14/18 12:20	11/15/18 04:42	HLM
Wet Chemistry Analysis									
Percent Solids	32	SM18 2540G	89.0 %		0.10	1	11/13/18 15:50	11/13/18 15:50	RLM



# **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number: 02204085.00

Client Site I.D.: ARC - Gainesville, VA Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

 Sample I.D.
 6-16
 Laboratory Sample ID:
 18K0387-33

**Grab Date/Time:** 11/02/2018 13:00

Field Residual CI: Field pH:

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	33	SW8082A	<0.124 mg/kg dry		0.124	1	11/14/18 12:20	11/15/18 05:01	HLM
PCB as Aroclor 1221	33	SW8082A	<0.124 mg/kg dry		0.124	1	11/14/18 12:20	11/15/18 05:01	HLM
PCB as Aroclor 1232	33	SW8082A	<0.124 mg/kg dry		0.124	1	11/14/18 12:20	11/15/18 05:01	HLM
PCB as Aroclor 1242	33	SW8082A	<0.124 mg/kg dry		0.124	1	11/14/18 12:20	11/15/18 05:01	HLM
PCB as Aroclor 1248	33	SW8082A	<0.124 mg/kg dry		0.124	1	11/14/18 12:20	11/15/18 05:01	HLM
PCB as Aroclor 1254	33RE1	SW8082A	1.11 mg/kg dry		0.619	10	11/14/18 12:20	11/15/18 16:59	HLM
PCB as Aroclor 1260	33	SW8082A	<0.124 mg/kg dry		0.124	1	11/14/18 12:20	11/15/18 05:01	HLM
Surr: DCB	33	SW8082A	57.5 %		30-105		11/14/18 12:20	11/15/18 05:01	HLM
Surr: TCMX	33	SW8082A	55.0 %		30-105		11/14/18 12:20	11/15/18 05:01	HLM
Wet Chemistry Analysis									
Percent Solids	33	SM18 2540G	80.5 %		0.10	1	11/13/18 15:50	11/13/18 15:50	RLM



# **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued:

11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number:

02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

**Sample I.D.** 6-17

**Laboratory Sample ID:** 

18K0387-34

Grab Date/Time:

11/02/2018 13:10

Field Residual CI:

Field pH:

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	34	SW8082A	<0.152 mg/kg dry		0.152	1	11/14/18 12:20	11/15/18 05:19	HLM
PCB as Aroclor 1221	34	SW8082A	<0.152 mg/kg dry		0.152	1	11/14/18 12:20	11/15/18 05:19	HLM
PCB as Aroclor 1232	34	SW8082A	<0.152 mg/kg dry		0.152	1	11/14/18 12:20	11/15/18 05:19	HLM
PCB as Aroclor 1242	34	SW8082A	<0.152 mg/kg dry		0.152	1	11/14/18 12:20	11/15/18 05:19	HLM
PCB as Aroclor 1248	34	SW8082A	<0.152 mg/kg dry		0.152	1	11/14/18 12:20	11/15/18 05:19	HLM
PCB as Aroclor 1254	34	SW8082A	<0.152 mg/kg dry		0.152	1	11/14/18 12:20	11/15/18 05:19	HLM
PCB as Aroclor 1260	34	SW8082A	<0.152 mg/kg dry		0.152	1	11/14/18 12:20	11/15/18 05:19	HLM
Surr: DCB	34	SW8082A	50.0 %		30-105		11/14/18 12:20	11/15/18 05:19	HLM
Surr: TCMX	34	SW8082A	45.0 %		30-105		11/14/18 12:20	11/15/18 05:19	HLM
Wet Chemistry Analysis									
Percent Solids	34	SM18 2540G	65.7 %		0.10	1	11/13/18 15:50	11/13/18 15:50	RLM



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number: 02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Laboratory Order ID: 18K0387

Analytical Results

Sample I.D. 6-18 Laboratory Sample ID: 18K0387-35

**Grab Date/Time:** 11/02/2018 13:20

Field Residual CI: Field pH:

					Reporting		Sample Prep	Analysis	
Parameter	Samp ID	Method	Result	Qual	Limit	D.F.	Date/Time	Date/Time	Analyst
Organochlorine Pesticides	and PCBs	by GC/ECD							
PCB as Aroclor 1016	35	SW8082A	<0.153 mg/kg dry		0.153	1	11/14/18 12:20	11/15/18 05:38	HLM
PCB as Aroclor 1221	35	SW8082A	<0.153 mg/kg dry		0.153	1	11/14/18 12:20	11/15/18 05:38	HLM
PCB as Aroclor 1232	35	SW8082A	<0.153 mg/kg dry		0.153	1	11/14/18 12:20	11/15/18 05:38	HLM
PCB as Aroclor 1242	35	SW8082A	<0.153 mg/kg dry		0.153	1	11/14/18 12:20	11/15/18 05:38	HLM
PCB as Aroclor 1248	35	SW8082A	<0.153 mg/kg dry		0.153	1	11/14/18 12:20	11/15/18 05:38	HLM
PCB as Aroclor 1254	35RE1	SW8082A	0.337 mg/kg dry		0.153	1	11/14/18 12:20	11/15/18 17:20	HLM
PCB as Aroclor 1260	35	SW8082A	<0.153 mg/kg dry		0.153	1	11/14/18 12:20	11/15/18 05:38	HLM
Surr: DCB	35	SW8082A	47.5 %		30-105		11/14/18 12:20	11/15/18 05:38	HLM
Surr: TCMX	35	SW8082A	57.5 %		30-105	i	11/14/18 12:20	11/15/18 05:38	HLM
Wet Chemistry Analysis									
Percent Solids	35	SM18 2540G	65.1 %		0.10	1	11/13/18 15:50	11/13/18 15:50	RLM



# **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2018 18:24

02204085.00

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger Project Number:

Client Site I.D.: ARC - Gainesville, VA Purchase Order:

## - Analytical Summary

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Wet Chemistry Ana	alysis	Preparation Method:	No Prep Wet	Chem	
18K0387-22	1.00 g / 1.00 mL	SM18 2540G	BBK0425	SBK0413	
18K0387-23	1.00 g / 1.00 mL	SM18 2540G	BBK0425	SBK0413	
18K0387-24	1.00 g / 1.00 mL	SM18 2540G	BBK0425	SBK0413	
18K0387-25	1.00 g / 1.00 mL	SM18 2540G	BBK0425	SBK0413	
18K0387-26	1.00 g / 1.00 mL	SM18 2540G	BBK0425	SBK0413	
18K0387-27	1.00 g / 1.00 mL	SM18 2540G	BBK0425	SBK0413	
18K0387-28	1.00 g / 1.00 mL	SM18 2540G	BBK0425	SBK0413	
18K0387-29	1.00 g / 1.00 mL	SM18 2540G	BBK0425	SBK0413	
18K0387-30	1.00 g / 1.00 mL	SM18 2540G	BBK0425	SBK0413	
18K0387-31	1.00 g / 1.00 mL	SM18 2540G	BBK0425	SBK0413	
18K0387-32	1.00 g / 1.00 mL	SM18 2540G	BBK0425	SBK0413	
18K0387-33	1.00 g / 1.00 mL	SM18 2540G	BBK0425	SBK0413	
18K0387-34	1.00 g / 1.00 mL	SM18 2540G	BBK0425	SBK0413	
18K0387-35	1.00 g / 1.00 mL	SM18 2540G	BBK0425	SBK0413	
Wet Chemistry Ana	alysis	Preparation Method:	No Prep Wet	Chem	
18K0387-01	1.00 g / 1.00 mL	SM18 2540G	BBK0465	SBK0446	
18K0387-02	1.00 g / 1.00 mL	SM18 2540G	BBK0465	SBK0446	
18K0387-03	1.00 g / 1.00 mL	SM18 2540G	BBK0465	SBK0446	
18K0387-04	1.00 g / 1.00 mL	SM18 2540G	BBK0465	SBK0446	
18K0387-05	1.00 g / 1.00 mL	SM18 2540G	BBK0465	SBK0446	
18K0387-06	1.00 g / 1.00 mL	SM18 2540G	BBK0465	SBK0446	
18K0387-07	1.00 g / 1.00 mL	SM18 2540G	BBK0465	SBK0446	
18K0387-08	1.00 g / 1.00 mL	SM18 2540G	BBK0465	SBK0446	
18K0387-09	1.00 g / 1.00 mL	SM18 2540G	BBK0465	SBK0446	
18K0387-10	1.00 g / 1.00 mL	SM18 2540G	BBK0465	SBK0446	
18K0387-11	1.00 g / 1.00 mL	SM18 2540G	BBK0465	SBK0446	
18K0387-12	1.00 g / 1.00 mL	SM18 2540G	BBK0465	SBK0446	
18K0387-13	1.00 g / 1.00 mL	SM18 2540G	BBK0465	SBK0446	
18K0387-14	1.00 g / 1.00 mL	SM18 2540G	BBK0465	SBK0446	
18K0387-15	1.00 g / 1.00 mL	SM18 2540G	BBK0465	SBK0446	
18K0387-16	1.00 g / 1.00 mL	SM18 2540G	BBK0465	SBK0446	
18K0387-17	1.00 g / 1.00 mL	SM18 2540G	BBK0465	SBK0446	
18K0387-18	1.00 g / 1.00 mL	SM18 2540G	BBK0465	SBK0446	



# **Certificate of Analysis**

## Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger Project Number: 02204085.00

Client Site I.D.: ARC - Gainesville, VA Purchase Order:

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
18K0387-19	1.00 g / 1.00 mL	SM18 2540G	BBK0465	SBK0446	
18K0387-20	1.00 g / 1.00 mL	SM18 2540G	BBK0465	SBK0446	
Wet Chemistry Analy	vsis	Preparation Method:	No Prep Wet C	hem	
18K0387-21	1.00 g / 1.00 mL	SM18 2540G	BBK0466	SBK0446	
Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Organochlorine Pest	ticides and PCBs by GC/ECD	Preparation Method:	SW3510C		
18K0387-01	30.9 g / 5.00 mL	SW8082A	BBK0455	SBK0491	AD80040
18K0387-01RE1	30.9 g / 5.00 mL	SW8082A	BBK0455	SBK0517	AH80049
18K0387-02	30.6 g / 5.00 mL	SW8082A	BBK0455	SBK0491	AD80040
18K0387-03	30.2 g / 5.00 mL	SW8082A	BBK0455	SBK0491	AD80040
18K0387-04	30.1 g / 5.00 mL	SW8082A	BBK0455	SBK0491	AD80040
18K0387-05	30.1 g / 5.00 mL	SW8082A	BBK0455	SBK0491	AD80040
18K0387-06	30.5 g / 5.00 mL	SW8082A	BBK0455	SBK0491	AD80040
18K0387-07	31.4 g / 5.00 mL	SW8082A	BBK0455	SBK0491	AD80040
18K0387-07RE1	31.4 g / 5.00 mL	SW8082A	BBK0455	SBK0517	AH80049
18K0387-08	33.2 g / 5.00 mL	SW8082A	BBK0455	SBK0491	AD80040
18K0387-08RE1	33.2 g / 5.00 mL	SW8082A	BBK0455	SBK0517	AH80049
18K0387-09	34.3 g / 5.00 mL	SW8082A	BBK0455	SBK0491	AD80040
18K0387-09RE1	34.3 g / 5.00 mL	SW8082A	BBK0455	SBK0517	AH80049
18K0387-10	31.0 g / 5.00 mL	SW8082A	BBK0455	SBK0491	AD80040
18K0387-10RE1	31.0 g / 5.00 mL	SW8082A	BBK0455	SBK0517	AH80049
18K0387-11	30.4 g / 5.00 mL	SW8082A	BBK0455	SBK0491	AD80040
18K0387-11RE1	30.4 g / 5.00 mL	SW8082A	BBK0455	SBK0517	AH80049
18K0387-12	30.7 g / 5.00 mL	SW8082A	BBK0455	SBK0491	AD80040
18K0387-12RE1	30.7 g / 5.00 mL	SW8082A	BBK0455	SBK0517	AH80049
18K0387-13	30.9 g / 5.00 mL	SW8082A	BBK0455	SBK0491	AD80040
8K0387-14	30.6 g / 5.00 mL	SW8082A	BBK0455	SBK0491	AD80040
8K0387-15	32.6 g / 5.00 mL	SW8082A	BBK0455	SBK0491	AD80040
18K0387-15RE1	32.6 g / 5.00 mL	SW8082A	BBK0455	SBK0517	AH80049
18K0387-16	30.2 g / 5.00 mL	SW8082A	BBK0455	SBK0491	AD80040
18K0387-17	30.7 g / 5.00 mL	SW8082A	BBK0455	SBK0491	AD80040
18K0387-18	31.1 g / 5.00 mL	SW8082A	BBK0455	SBK0491	AD80040
18K0387-18RE1	31.1 g / 5.00 mL	SW8082A	BBK0455	SBK0517	AH80049



# **Certificate of Analysis**

## Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger Project Number: 02204085.00

Client Site I.D.: ARC - Gainesville, VA Purchase Order:

Sample ID	Preparation Factors Initial / Final	Method	Batch ID	Sequence ID	Calibration ID
Organochlorine Pes	ticides and PCBs by GC/ECD	Preparation Method:	SW3510C		
18K0387-19	31.2 g / 5.00 mL	SW8082A	BBK0490	SBK0491	AD80040
18K0387-20	30.8 g / 5.00 mL	SW8082A	BBK0490	SBK0491	AD80040
18K0387-20RE1	30.8 g / 5.00 mL	SW8082A	BBK0490	SBK0517	AH80049
18K0387-21	31.3 g / 5.00 mL	SW8082A	BBK0490	SBK0491	AD80040
18K0387-22	30.2 g / 5.00 mL	SW8082A	BBK0490	SBK0491	AD80040
18K0387-23	30.7 g / 5.00 mL	SW8082A	BBK0490	SBK0491	AD80040
18K0387-24	31.4 g / 5.00 mL	SW8082A	BBK0490	SBK0491	AD80040
18K0387-25	30.7 g / 5.00 mL	SW8082A	BBK0490	SBK0491	AD80040
18K0387-26	30.1 g / 5.00 mL	SW8082A	BBK0490	SBK0491	AD80040
18K0387-27	30.3 g / 5.00 mL	SW8082A	BBK0490	SBK0491	AD80040
18K0387-27RE1	30.3 g / 5.00 mL	SW8082A	BBK0490	SBK0517	AH80049
18K0387-28	30.1 g / 5.00 mL	SW8082A	BBK0490	SBK0491	AD80040
18K0387-29	30.3 g / 5.00 mL	SW8082A	BBK0490	SBK0491	AD80040
18K0387-29RE1	30.3 g / 5.00 mL	SW8082A	BBK0490	SBK0517	AH80049
18K0387-30	30.7 g / 5.00 mL	SW8082A	BBK0490	SBK0491	AD80040
18K0387-31	30.2 g / 5.00 mL	SW8082A	BBK0490	SBK0491	AD80040
18K0387-31RE1	30.2 g / 5.00 mL	SW8082A	BBK0490	SBK0518	AH80059
18K0387-32	30.6 g / 5.00 mL	SW8082A	BBK0490	SBK0491	AD80040
18K0387-32RE1	30.6 g / 5.00 mL	SW8082A	BBK0490	SBK0518	AH80059
18K0387-33	30.1 g / 5.00 mL	SW8082A	BBK0490	SBK0491	AD80040
18K0387-33RE1	30.1 g / 5.00 mL	SW8082A	BBK0490	SBK0517	AH80049
18K0387-34	30.1 g / 5.00 mL	SW8082A	BBK0490	SBK0491	AD80040
18K0387-35	30.1 g / 5.00 mL	SW8082A	BBK0490	SBK0491	AD80040
18K0387-35RE1	30.1 g / 5.00 mL	SW8082A	BBK0490	SBK0517	AH80049



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston Date Issued:

11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number:

02204085.00

RPD

%REC

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Source

## Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

## Air Water & Soil Laboratories, Inc.

Spike

Reporting

Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Qual
Analyte	Result	LIIIIII	Ullis	Level	Result	70REC	LITTIES	THE D	LIIIII	Quai
Batch BBK0455 - SW3510C										
Blank (BBK0455-BLK1)				Prepared	d & Analyzed	d: 11/14/2	018			
PCB as Aroclor 1016	<0.100 mg/kg wet	0.100	mg/kg wet	•						
PCB as Aroclor 1221	<0.100 mg/kg wet	0.100	mg/kg wet							
PCB as Aroclor 1232	<0.100 mg/kg wet	0.100	mg/kg wet							
PCB as Aroclor 1242	<0.100 mg/kg wet	0.100	mg/kg wet							
PCB as Aroclor 1248	<0.100 mg/kg wet	0.100	mg/kg wet							
PCB as Aroclor 1254	<0.100 mg/kg wet	0.100	mg/kg wet							
PCB as Aroclor 1260	<0.100 mg/kg wet	0.100	mg/kg wet							
Surr: DCB	0.0623		mg/kg wet	0.0623		100	30-105			
Surr: TCMX	0.0405		mg/kg wet	0.0623		65.0	30-105			
CS (BBK0455-BS1)				Prepared	d & Analyzed	d: 11/14/2	018			
PCB as Aroclor 1016	0.145 mg/kg wet	0.100	mg/kg wet	0.153	mg/kg wet	95.0	60-140			
PCB as Aroclor 1260	0.174 mg/kg wet	0.100	mg/kg wet	0.153	mg/kg wet	114	60-140			
Surr: DCB	0.0627		mg/kg wet	0.0612	mg/kg wet	102	30-105			
Surr: TCMX	0.0566		mg/kg wet	0.0612	mg/kg wet	92.5	30-105			
Matrix Spike (BBK0455-MS1)	Soul	ce: 18K038	34-01	Prepared	d & Analyzed	d: 11/14/2	018			
PCB as Aroclor 1016	<0.100 mg/kg wet	0.100	mg/kg wet	0.161	<0.100 mg/kg	we <b>5</b> 1.0	60-140			М
PCB as Aroclor 1260	<0.100 mg/kg wet	0.100	mg/kg wet	0.161	<0.100 mg/kg	we <b>2</b> 9.0	60-140			М
Surr: DCB	0.0209		mg/kg wet	0.0643	mg/kg wet	32.5	30-105			
Surr: TCMX	0.0241		mg/kg wet	0.0643	mg/kg wet	37.5	30-105			
Matrix Spike Dup (BBK0455-MSD1)	Soul	ce: 18K038	34-01	Prepared	d & Analyzed	d: 11/14/2	018			
PCB as Aroclor 1016	0.108 mg/kg wet	0.100	mg/kg wet	0.146	<0.100 mg/kg	y we <b>₹</b> 4.0	60-140	27.5	20	Р
PCB as Aroclor 1260	<0.100 mg/kg wet	0.100	mg/kg wet	0.146	<0.100 mg/kg	we <b>4</b> 1.0	60-140		20	M
Surr: DCB	0.0205		mg/kg wet	0.0585	mg/kg wet	35.0	30-105			
Surr: TCMX	0.0249		mg/kg wet	0.0585	mg/kg wet	42.5	30-105			



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston Date Issued:

11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number:

02204085.00

RPD

%REC

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

Source

#### Organochlorine Pesticides and PCBs by GC/ECD - Quality Control

#### Air Water & Soil Laboratories, Inc.

Spike

Reporting

Analyte	Result	Limit	Units	Spike Level	Result	%REC	Limits	RPD	Limit	Qual
, many to	, toouit			2010.		701120	Liiillo			
Batch BBK0490 - SW3510C										
Blank (BBK0490-BLK1)				Prepared	I: 11/14/201	8 Analyze	d: 11/15/2	018		
PCB as Aroclor 1016	<0.100 mg/kg wet	0.100	mg/kg wet							
PCB as Aroclor 1221	<0.100 mg/kg wet	0.100	mg/kg wet							
PCB as Aroclor 1232	<0.100 mg/kg wet	0.100	mg/kg wet							
PCB as Aroclor 1242	<0.100 mg/kg wet	0.100	mg/kg wet							
PCB as Aroclor 1248	<0.100 mg/kg wet	0.100	mg/kg wet							
PCB as Aroclor 1254	<0.100 mg/kg wet	0.100	mg/kg wet							
PCB as Aroclor 1260	<0.100 mg/kg wet	0.100	mg/kg wet							
Surr: DCB	0.0644		mg/kg wet	0.0660		97.5	30-105			
Surr: TCMX	0.0611		mg/kg wet	0.0660		92.5	30-105			
_CS (BBK0490-BS1)				Prepared	l: 11/14/201	8 Analyze	d: 11/15/2	018		
PCB as Aroclor 1016	0.157 mg/kg wet	0.100	mg/kg wet	0.167	mg/kg wet	94.0	60-140			
PCB as Aroclor 1260	0.170 mg/kg wet	0.100	mg/kg wet	0.167	mg/kg wet	102	60-140			
Surr: DCB	0.0533		mg/kg wet	0.0667	mg/kg wet	80.0	30-105			
Surr: TCMX	0.0550		mg/kg wet	0.0667	mg/kg wet	82.5	30-105			
Matrix Spike (BBK0490-MS1)	Soui	rce: 18K038	37-26	Prepared	I: 11/14/201	8 Analyze	d: 11/15/2	018		
PCB as Aroclor 1016	0.190 mg/kg dry	0.121	mg/kg dry	0.202	<0.121 mg/kg	g dry94.0	60-140			
PCB as Aroclor 1260	0.174 mg/kg dry	0.121	mg/kg dry	0.202	<0.121 mg/kg	g dry86.0	60-140			
Surr: DCB	0.0545		mg/kg dry	0.0808	mg/kg dry	67.5	30-105			
Surr: TCMX	0.0545		mg/kg dry	0.0808	mg/kg dry	67.5	30-105			
Matrix Spike Dup (BBK0490-MSD1)	Soui	rce: 18K038	37-26	Prepared	I: 11/14/201	8 Analyze	d: 11/15/2	018		
PCB as Aroclor 1016	0.183 mg/kg dry	0.122	mg/kg dry	0.203	<0.122 mg/kg	g dry90.0	60-140	3.69	20	
PCB as Aroclor 1260	0.138 mg/kg dry	0.122	mg/kg dry	0.203	<0.122 mg/kg	g dry68.0	60-140	22.7	20	Р
Surr: DCB	0.0447		mg/kg dry	0.0813	mg/kg dry	55.0	30-105			
Surr: TCMX	0.0467		mg/kg dry	0.0813	mg/kg dry	57.5	30-105			



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Reston VA, 20190

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Project Number:

02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

#### **Wet Chemistry Analysis - Quality Control**

#### Air Water & Soil Laboratories, Inc.

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Qual
Batch BBK0425 - No Prep Wet Chem										
Blank (BBK0425-BLK1)				Prepared	& Analyzed	d: 11/13/20	018			
Percent Solids	100 %	0.10	%							
Duplicate (BBK0425-DUP1)	Sour	ce: 18K049	3-02	Prepared	& Analyze	d: 11/13/20	018			
Percent Solids	86.2 %	0.10	%	8	36.5 %			0.392	20	
Duplicate (BBK0425-DUP2)	Sour	ce: 18K049	4-10	Prepared	& Analyze	d: 11/13/20	018			
Percent Solids	86.7 %	0.10	%	3	36.4 %			0.324	20	
Batch BBK0465 - No Prep Wet Chem										
Blank (BBK0465-BLK1)				Prepared	& Analyze	d: 11/14/20	018			
Percent Solids	100 %	0.10	%							
Duplicate (BBK0465-DUP1)	Sour	ce: 18K038	7-10	Prepared	& Analyze	d: 11/14/20	018			
Percent Solids	45.6 %	0.10	%		53.2 %			15.3	20	
Duplicate (BBK0465-DUP2)	Sour	ce: 18K038	7-20	Prepared	& Analyze	d: 11/14/20	018			
Percent Solids	68.2 %	0.10	%	6	66.7 %			2.34	20	
Batch BBK0466 - No Prep Wet Chem										
Blank (BBK0466-BLK1)				Prepared	& Analyze	d: 11/14/20	018			
Percent Solids	100 %	0.10	%							
Duplicate (BBK0466-DUP1)	Sour	ce: 18K038	7-21	Prepared	& Analyze	d: 11/14/20	018			
Percent Solids	78.1 %	0.10	%	7	76.3 %			2.28	20	



# **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2

11/15/2018 18:24

11260 Roger Bacon Drive Suite 30 Reston VA, 20190

Submitted To: Austin Drooger

Project Number:

02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

## **Certified Analyses included in this Report**

Analyte	Certifications						
SW8082A in Solids							
PCB as Aroclor 1016	VELAP,	NC					
PCB as Aroclor 1221	VELAP,	NC					
PCB as Aroclor 1232	VELAP,	NC					
PCB as Aroclor 1242	VELAP,	NC					
PCB as Aroclor 1248	VELAP,	NC					
PCB as Aroclor 1254	VELAP,	NC					
PCB as Aroclor 1260	VELAP,	NC					
Code	Description	Lab Number	Expires				
MdDOE	Maryland DE Drinking Water	341	12/31/2019				
NC	North Carolina DENR	495	12/31/2018				
VELAP	NELAC-Virginia Certificate #9991	460021	06/14/2019				
WVDEP	West Virginia DEP	350	11/30/2018				



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger Project Number: 02204085.00

Client Site I.D.: ARC - Gainesville, VA Purchase Order:

#### **Summary of Data Qualifiers**

M Matrix spike recovery is outside established acceptance limits

P Duplicate analysis does not meet the acceptance criteria for precision

S Surrogate recovery was outside acceptance criteria

RPD Relative Percent Difference

Qual Qualifers

-RE Denotes sample was re-analyzed

D.F. Dilution Factor. Please also see the Preparation Factor in the Analysis Summary section.

TIC Tentatively Identified Compounds are compounds that are identified by comparing the analyte mass spectral pattern with the NIST spectral library .

A TIC spectral match is reported when the pattern is at least 75% consistent with the published pattern. Compound concentrations are estimated

and are calculated using an internal standard response factor of 1.

PCBs, Total Total PCBs are defined as the sum of detected Aroclors 1016, 1221, 1232, 1248, 1254, 1260, 1262, and 1268.





LABORAT	ORII	ES,	INC.				CH	AIN O	r Cua	3 I C	וטי								PAGE 2	OF C
COMPANY NAME: SCS EV	19/1	ne	ers		IN	/OICE	TO:	SP	WE	5			PI	ROJEC	T NAM	E/Quo	te#: 👍	FRC-		sville, VA
CONTACT: AUSTIN Drow					IN	/OICE	CONTA	CT:	1				S	TE NA	ме: Д	RC	- Ga	ines	ville,	IA
ADDRESS: 1/260 Roger B.	aco.	10	2300.	Reston.	VA IN	/OICE	ADDRE	SS:					Р	ROJEC	T NUM	BER:	022	0408	35.00	<b>/</b> -/-
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s sample for compliance reporti	ing?	Υ	ES N	0)			nple from					YES	NO	)			PWS	I.D. #:		
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Matrix Codes: WW=Waste Water/Storm Water/S	ater G	W=G	Fround W	ater DW=	Drinking '	Water S	=Soil/Solids	OR=Org	anic A=A	ir WF	=Wipe	OT=Other_							COM	IMENTS
			ls)									AN	IALYS	IS / (PF	RESER'	VATIV	E)			Codes: N=Nitric Acid Acid S=Sulfuric Acid
CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or	Grab Time	rved	Matrix (See Codes)	Number of Containers	RB-5W8082A				8				H=Sodium Hyl Acid Z=Zinc Thiosulfat PLEASE NOTE INTERFERENC	droxide A=Ascorbic Acetate T=Sodium e M=Methanol  PRESERVATIVE(S), E CHECKS or PUMP E (L/min)
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4) 4-4	$\perp \! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \! \!$						133			$\perp$										
5) 4-5	4						140		$\perp$	4										
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COMPANY NAME: SCS EV	GIV	ne	ers		INV	OICE TO	:	SA	ME				I	PROJEC	CT NAM	1E/Quo	te #: 4	ARC-	Gamesville	NA
CONTACT: Austin Drow					INV	OICE CC	NTAC	T:					1	SITE NA	ME: /	FRC		3.00	ville NA	-
ADDRESS: 1/260 Roger B.	Tu.	10	-300	Reston,	VA IN	OICE AD	DRES	S:					I	PROJEC			022	0408	55,00	
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FAX #:			Ej	MAIL: 0	idroc	geras	scsen	19:Ne	ers.	CO	M		I	Pretreat	ment Pi	rogram	:			
s sample for compliance reporti	ng?	Υ	ES (N	0)		Is sample	from a	chlori	nated s	supp	ly?	YES	NO	0)			PWS	I.D. #:		
SAMPLER NAME (PRINT):	(2)	nv	n D	nugre	_ SA	MPLER S	IGNAT	URE:	Al								Turn	Around	Time: Da	y(s)
latrix Codes: WW=Waste Water/Storm Wa	ter G	W=G	Fround W	Vater DW=	Drinking '	Water S=Soil	/Solids (	OR=Orga	nic A=Ai	WP:	=Wipe O	T=Other_					*		COMMENT	S
	İ		als)									AN	ALY	SIS / (P	RESEF	RVATIV	Έ)		Preservative Codes: N=N C=Hydrochloric Acid S=Su	
CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	ved	Matrix (See Codes)	Number of Containers	PCB-5W8082A								H=Sodium Hydroxide A= Acid Z=Zinc Acetate T= Thiosulfate M=Meth  PLEASE NOTE PRESERV. INTERFERENCE CHECKS RATE (L/min)	-Ascorbic -Sodium lanol VATIVE(S),
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COMPANY NAME: SCS EVA	110	e	ers	)	INV	OICE TO	):	SA	ME				PF	ROJEC	T NAME	E/Quot	e#: 🗲	tRC-	Ganesvil	le, VA
CONTACT: Austin Drova	jes					OICE C	ONTAC	T:						TE NA		RC	- Ga	ines	ville NA	1
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AX #:				EMAIL: ac	droc	gera	scsen	gine	ers.	CO	M		Pr	etreatn	nent Pro	gram:				
s sample for compliance reporting	g?	YI	ES (	NO)		is sample	e from a	chlori	nated s	supp	ly?	YES	NO	)			PWS I	.D. #:		
SAMPLER NAME (PRINT):				) nougres		MPLER S			Al			545					Turn /	Arounc	d Time:	ay(s)
atrix Codes: WW=Waste Water/Storm Water	er G\	W=G	round	Water DW=D	rinking \	Water S=So	il/Solids (	OR=Orga	nic A=Ai	r WP:	=Wipe C	OT=Other_							COMMEN	ITS
			als)									AN	IALYS	IS / (PF	RESERV	VATIV	E)		Preservative Codes: N C=Hydrochloric Acid S=	
			Metals)									T		T	T				H=Sodium Hydroxide Acid Z=Zinc Acetate	
			N De								ZA Z	1							Thiosulfate M=Me	ethanol
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										Leve	21 TV						78	v130325002		J. <b>J-</b>





COMPANY NAME: SCS EVA	111	1ee	213		INV	OICE TO	:	SA	ME			8	PR	OJEC.	TNAM	E/Quot	te#: 🗲	HC-1	Zames	ville, VA
CONTACT: Austin Drove	) ies					OICE CO	NTAC	<i>σ,</i> τ					SIT	ENA	иE: <i>[</i>	RC			ille N	
DDRESS: 1/260 Roger Ba	cor	D	-,300	Reston, V	AINV	OICE AD	DRESS	S:					PR	OJEC.	T NUM	BER:	022	04085	200	
PHONE #: 571-353-2				1	, INV	OICE PH	ONE#	:	520				P.0	D. #:					11	
AX #:			EV	MAIL: a	droo	ger as	scsen	gine	ecs.	CO	M		Pre	etreatm	ent Pr	ogram:				
s sample for compliance reportin	g?	YE	ES (N	9)		ls sample	from a	chlori	nated s	supp	ly?	YES	(NO')				PWS I	I.D. #:		
SAMPLER NAME (PRINT):		<b>7</b> √	1 D	nugre		MPLER S			Al			· V					Turn /	Around T	ime:	Day(s)
latrix Codes: WW=Waste Water/Storm Water	er G	W=G	round W	ater DW=D	rinking \	Water S=Soil	/Solids C	R=Orgai	nic A=Air	r WP:	=Wipe O	T=Other_							COM	MENTS
			ils)									AN	ALYSI	S/(PF	RESER	VATIV	E)			des: N=Nitric Acid
CLIENT SAMPLE I.D.	Grab	Composite	Field Filtered (Dissolved Metals)	Composite Start Date	Composite Start Time	Grab Date or Composite Stop Date	Grab Time or Composite Stop Time	Time Preserved	Matrix (See Codes)	Number of Containers	FCB-5W8082A							PL	H=Sodium Hydro Acid Z=Zinc Ac Thiosulfate  Thiosulfate	oxide A-Ascorbic cetate T=Sodium M=Methanol  RESERVATIVE(S), CHECKS or PUMP (L/min)
1) 6-14	×					11/2/18	1240		501	1	X									
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										Leve	el IV							am is furthermore program 2.5%	ı age	, 01 01 02



## **Certificate of Analysis**

#### Final Report

Client Name: SCS Engineers-Reston

Date Issued: 11/15/2018 18:24

11260 Roger Bacon Drive Suite 30

Reston VA, 20190

Submitted To: Austin Drooger

Project Number:

02204085.00

Client Site I.D.: ARC - Gainesville, VA

Purchase Order:

# **Sample Conditions Checklist**

Samples Received at:	4.60°C
How were samples received?	FedEx Express
Were Custody Seals used? If so, were they received intact?	No
Are the custody papers filled out completely and correctly?	Yes
Do all bottle labels agree with custody papers?	Yes
Is the temperature blank or representative sample within acceptable limits? (above freezing to 6°C) or received on ice and recently taken?	Yes
Are all samples within holding time for requested laboratory tests?	Yes
Is a sufficient amount of sample provided to perform the tests included?	Yes
Are all samples in appropriate containers for the analyses requested?	Yes
Were volatile organic containers received?	No
Are all volatile organic and TOX containers free of headspace?	NA
Is a trip blank provided for each VOC sample set? VOC sample sets include EPA8011, EPA504, EPA8260, EPA624, EPA8015 GRO, EPA8021, EPA524, and RSK-175.	NA
Are all samples received appropriately preserved? Note that metals containers do not require field preservation but lab preservation may delay analysis.	Yes

## **Work Order Comments**

Per Mike McLaughlin, data is due by close of business 11-15-18. KLC 11-13-2018.



a member of The GEL Group INC









PO Box 30712 Charleston, SC 29417 2040 Savage Road Charleston, SC 29407 P 843.556.8171 F 843.766.1178

gel.com

September 19, 2018

Michael W. McLaughlin SCS Engineers 11260 Roger Bacon Drive Suite 300 Reston, Virginia 20190

Re: Routine Analysis Work Order: 459266

Dear Michael McLaughlin:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on September 11, 2018. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4778.

Sincerely,

Taylor Cannon for Hope Taylor Project Manager

Purchase Order: xxx Enclosures

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

# Certificate of Analysis Report for

SCES001 SCS Engineers

Client SDG: 459266 GEL Work Order: 459266

#### The Qualifiers in this report are defined as follows:

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a Tracer compound
- \*\* Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Hope Taylor.

	18CMG-		
Reviewed by			

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

# **Certificate of Analysis**

Report Date: September 19, 2018

Company:

SCS Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact: Project:

Michael W. McLaughlin Routine Analysis

Client Sample ID:

B31S-1

Sample ID:

459266001

Matrix:

Soil

Collect Date:

07-SEP-18 10:00

Receive Date: Collector:

11-SEP-18 Client

Moisture:

18.9%

U

	Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch	Method
--	-----------	-----------	--------	----	----	-------	----	-----------------	------------	--------

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

NE

0.607

2.43

Analyst

BF

ug/kg

Date

09/17/18

9.85 1 BF

Time

1430

**Analyst Comments** 

Project:

Client ID:

SCES00118

SCES001

09/17/18 1843 1802372

Prep Batch

1802371

72 1

The following Prep Methods were performed:

Method Description
SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

5 W 040 0030 Woulde

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

# **Certificate of Analysis**

Report Date: September 19, 2018

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

B31W-2

459266002

Matrix:

Soil

Collect Date:

07-SEP-18 10:30

Receive Date:

11-SEP-18

Collector:

Client 20.9%

U

Moisture:

	esult DL RL	Units PF	DF Analyst Date Time Batch Method
--	-------------	----------	-----------------------------------

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

0.626

2.50

ug/kg

Project:

Client ID:

SCES00118

SCES001

9.90 1 BF

09/17/18 1913 1802372

The following Prep Methods were performed:

Method Description SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

Analyst BF

Date 09/17/18 Time 1430

**Analyst Comments** 

Prep Batch

1802371

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

**Notes:** 

Column headers are defined as follows:

DF: Dilution Factor DL: Detection Limit MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level PF: Prep Factor RL: Reporting Limit

SQL: Sample Quantitation Limit

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# **Certificate of Analysis**

Report Date: September 19, 2018

Company:

SCS Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

B31N-3 459266003

Matrix:

Soil

Collect Date:

07-SEP-18 11:30

Receive Date:

11-SEP-18

Collector:

Client 26.4%

U

Moisture:

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Method

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

1

0.679

2.72

Analyst

BF

ug/kg

Date

09/17/18

Project:

Client ID:

10.0 1 BF

Time

1430

**Analyst Comments** 

SCES00118

SCES001

09/17/18 1923 1802372

Prep Batch

1802371

72 1

The following Prep Methods were performed:

MethodDescriptionSW846 6850 ModifiedEPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

**Notes:** 

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity

PF: Prep Factor
RL: Reporting Limit
SOL: Sample Quantit

Lc/LC: Critical Level

MDC: Minimum Detectable Concentration

SQL: Sample Quantitation Limit

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis** 

Report Date: September 19, 2018

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project: Client Sample ID: Routine Analysis

Sample ID:

B32N-1 459266004

Matrix:

Soil

Collect Date:

05-SEP-18 10:00

Receive Date:

11-SEP-18

Collector:

Client

Moisture:

12.7%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

Method

1.65

0.573

2.29

Analyst

BF

ug/kg

Date

09/17/18

Project:

Client ID:

10.0 1 BF

Time

1430

**Analyst Comments** 

SCES00118

SCES001

09/17/18 1933 1802372

Prep Batch

1802371

The following Prep Methods were performed:

Description SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

**Notes:** 

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

# **Certificate of Analysis**

Project:

Client ID:

**Analyst Comments** 

SCES00118

SCES001

Report Date: September 19, 2018

Company:

SCS Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

B32SW-2 459266005

Matrix:

Soil

Collect Date:

05-SEP-18 12:00

Receive Date:

11-SEP-18

Collector:

Client

Moisture:

15.1%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Ana	lyst Date	Time Ba	tch Method
LC-MS/MS Perchlorat	te										
Perchlorate by LC-MS	/MS "Dry We	ight Corrected"									
Perchlorate	U	ND	0.580	2.32	ug/kg	9.85	1	BF	09/17/18	1943 180	2372 1

The following Prep Methods were performed:

MethodDescriptionAnalystDateTimePrep BatchSW846 6850 ModifiedEPA 6850 Perchlorate Extraction SolidsBF09/17/1814301802371

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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## **Certificate of Analysis**

Report Date: September 19, 2018

Company:

SCS Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

Client Sample ID:

B32NW-3 459266006

Matrice

0-:1

Matrix:

Soil

Collect Date:

05-SEP-18 11:00

Receive Date:

11-SEP-18

Collector: Moisture:

Client 14.1%

Parameter Qualifier Result DL RL Units PF DF Analyst Date Time Batc	
---	--

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

ND

0.582

2.33

Analyst

BF

ug/kg

Date

09/17/18

Project:

Client ID:

SCES00118

SCES001

10.0 1 BF

Time

1430

**Analyst Comments** 

09/17/18 2033 1802372

Prep Batch

1802371

2 1

The following Prep Methods were performed:

MethodDescriptionSW846 6850 ModifiedEPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

U

**Notes:** 

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

# Certificate of Analysis

Report Date: September 19, 2018

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

Client Sample ID:

B32SE-4

459266007

Matrix:

Soil

Collect Date:

05-SEP-18 13:50

Receive Date:

11-SEP-18

Collector: Moisture:

Client 16.9%

Parameter	
I C MS/MS	Parchlorata

LC-MS/MS Perchlorate Perchlorate by LC-MS/MS "Dry Weight Corrected"

Qualifier

Perchlorate

Result

0.602

DL

2.41

RL

ug/kg

Units

Project:

Client ID:

PF

10.0 1 BF

09/17/18 2042 1802372

Time Batch Method

The following Prep Methods were performed:

Method

Description

Analyst BF

Date 09/17/18 Time

1430

SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids The following Analytical Methods were performed:

Method Description **Analyst Comments** 

SCES00118

SCES001

DF Analyst Date

1802371

Prep Batch

SW846 6850 Modified

## **Notes:**

Column headers are defined as follows:

DF: Dilution Factor DL: Detection Limit Lc/LC: Critical Level PF: Prep Factor RL: Reporting Limit

MDA: Minimum Detectable Activity MDC: Minimum Detectable Concentration

SQL: Sample Quantitation Limit

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## **Certificate of Analysis**

Report Date: September 19, 2018

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

88-1 459266008

Matrix:

Soil

07-SEP-18 12:00

Collect Date: Receive Date:

11-SEP-18

Collector:

Client

Moisture:

23.3%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

0.643

BF

Analyst

2.57

ug/kg

Date

09/17/18

9.85 1 BF

Time

1430

**Analyst Comments** 

Project:

Client ID:

09/17/18 2052 1802372

Prep Batch

1802371

SCES00118

SCES001

The following Prep Methods were performed:

Method Description SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

U

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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# **Certificate of Analysis**

Report Date: September 19, 2018

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

88-2

459266009

Matrix:

Soil

Collect Date:

07-SEP-18 13:00

Receive Date:

11-SEP-18

Collector: Moisture: Client 15.7%

Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch M	<b>1</b> ethod

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

Parameter

0.584

2.34

ug/kg

Project:

Client ID:

SCES00118

SCES001

9.85 1 BF

09/17/18 2102 1802372

The following Prep Methods were performed:

Method Description SW846 6850 Modified

EPA 6850 Perchlorate Extraction Solids

Analyst BF

Date 09/17/18 Time 1430

Prep Batch

1802371

The following Analytical Methods were performed:

Method

Description

**Analyst Comments** 

SW846 6850 Modified

## **Notes:**

Column headers are defined as follows:

DF: Dilution Factor DL: Detection Limit MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

# **Certificate of Analysis**

Report Date: September 19, 2018

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

88-3 459266010

Matrix:

Soil

Collect Date:

Client Sample ID:

07-SEP-18 14:30

Receive Date:

11-SEP-18

Collector:

Client

Moisture:

19.6%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

0.622

2.49

Analyst

BF

ug/kg

Date

09/17/18

10.0 1 BF

Time

1430

**Analyst Comments** 

Project:

Client ID:

SCES00118

SCES001

09/17/18 2112 1802372

Prep Batch

1802371

The following Prep Methods were performed:

Method Description SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

U

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

**QC Summary** 

Report Date: September 19, 2018

Page 1 of 2

**SCS Engineers** 

11260 Roger Bacon Drive

Suite 300

Reston, Virginia

**Contact:** Michael W. McLaughlin

Workorder: 459266

Parmname		NOM	[	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
LC-MS/MS Perchlor Batch 180	rate 02372 ———												
QC1204113547 Perchlorate	ICS	2.00			J	1.93	ug/kg		97	(70%-130%	) BF	09/17/1	18 18:33
QC1204113544 Perchlorate	LCS	1.97			J	1.84	ug/kg		93	(70%-130%	)	09/17/1	18 18:23
QC1204113543 Perchlorate	МВ				U	ND	ug/kg					09/17/1	18 18:13
QC1204113545 Perchlorate	459266001 MS	2.43	U	ND		2.82	ug/kg		110	(75%-125%)	)	09/17/1	18 18:53
QC1204113546 Perchlorate	459266001 MSD	2.45	U	ND		2.65	ug/kg	6	102	(0%-30%)	)	09/17/1	18 19:03

#### **Notes:**

The Qualifiers in this report are defined as follows:

- \*\* Analyte is a Tracer compound
- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- Result is greater than value reported >
- The TIC is a suspected aldol-condensation product Α
- В The target analyte was detected in the associated blank.
- BDResults are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- Е Concentration of the target analyte exceeds the instrument calibration range
- FA Failed analysis.
- Η Analytical holding time was exceeded
- J Value is estimated

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

## **QC Summary**

459266 Page 2 of 2 Parmname **NOM** Sample Qual QC Units RPD% REC% Range Anlst Date Time

JNX Non Calibrated Compound

Workorder:

- Analyte present. Reported value may be biased high. Actual value is expected to be lower. K
- L Analyte present. Reported value may be biased low. Actual value is expected to be higher.
- Μ M if above MDC and less than LLD
- $\mathbf{M}$ REMP Result > MDC/CL and < RDL
- Organics--Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based N on nearest internal standard response factor
- N Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor
- N/A RPD or %Recovery limits do not apply.
- N1See case narrative
- Analyte concentration is not detected above the detection limit ND
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- P Organics--The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, the difference is >70%.
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Compound cannot be extracted
- UJ Gamma Spectroscopy--Uncertain identification
- UL Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Other specific qualifiers were required to properly define the results. Consult case narrative.
- Y QC Samples were not spiked with this compound
- ٨ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- Preparation or preservation holding time was exceeded h

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable. ^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than

five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

\* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

#### Technical Case Narrative SCS Engineers (SCES) SDG #: 459266

## **Perchlorates by LCMSMS**

<u>Product:</u> Definitive Low Level Perchlorate Analysis Utilizing Liquid Chromatography/Mass Spectrometry/Mass Spectrometry (LC/MS/MS) by EPA Method 6850 Modified (6850M)

Analytical Method: SW846 6850 Modified Analytical Procedure: GL-OA-E-067 REV# 14 Analytical Batches: 1802372 and 1802371

The following samples were analyzed using the above methods and analytical procedure(s).

<b>GEL Sample ID#</b>	Client Sample Identification
459266001	B31S-1
459266002	B31W-2
459266003	B31N-3
459266004	B32N-1
459266005	B32SW-2
459266006	B32NW-3
459266007	B32SE-4
459266008	88-1
459266009	88-2
459266010	88-3
1204113543	Method Blank (MB)
1204113544	Laboratory Control Sample (LCS)
1204113545	459266001(B31S-1) Matrix Spike (MS)
1204113546	459266001(B31S-1) Matrix Spike Duplicate (MSD)
1204113547	Interference Check Sample (ICS)

The samples in this SDG were analyzed on a "dry weight" basis.

#### **Data Summary:**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

# **Radiochemistry**

**Product:** Dry Weight

**Analytical Method:** ASTM D 2216 (Modified) **Analytical Procedure:** GL-OA-E-020 REV# 13

**Analytical Batch:** 1802344

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
459266001	B31S-1
459266002	B31W-2

459266003	B31N-3
459266004	B32N-1
459266005	B32SW-2
459266006	B32NW-3
459266007	B32SE-4
459266008	88-1
459266009	88-2
459266010	88-3
1204113495	459266001(B31S-1) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

#### **Data Summary:**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

#### **Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

	OEL Laboratories, LLC 2040 Savige Road Charleston, SC 29407 Phone (843) 556-8171 Fax, (843) 766-1178	Sample Analysis Requested (*) (Fill in the number of containers for each text)  Preservative Type (6)				Rush: X Specify: 7 - 1 ( Subject to Surcharge)		The Perfectlo New York	Please provide any additional details below regarding harding and/or disp concerns. (i.e., Origin of sample(s), to of site collected from, odd matrices, en
	Laborate   Laboratorical Residence   Labor	Should this sample be considered:	A Color of the Col			TAT Requested: Normal: Ru	Sample Collection Time Zone: [   Eastern [ ] Pacific     Central [ ] Mountain   ] Other	Find Flared For Light desired, and the language EB = Equipment Blank, MS = Matrix Spike Sample, MSD = Matrix Spike Duplicate Sample, G = Crack, C = Composite  For Light desired, and desired, and the sample was field tiltered or - N - Int sample was not field filtered  For Light Duplicate Sample, GW—Common and SW—Surface Water, WW—Waster Water, WE—Mise Liquid SO—Soil, SD—Scilment, SL—Shidger, SS—Soild Waster, O—Oil, F—Filter, P—Wise, U—Filter, P—Wise, U—Filte	Other
Jo		13 SA	Collected Collec	-2- -2- -2- -2- -2- -2- -2- -2- -2- -2-	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Chain of Custody Signatures Time Received by (signed) Date	Control things and deliners are not a same to the Revents & Review form (SRR.)  Control Number - Chem Deserment	Final Flavor, for liquid matrices, indicate with 2-1-fin yes the sample was field illutred or N - for sample was not field filtered.  Final Each DW - Danking Water, GW - Goundwater, SW - Surface Water, WW-Water, WE - More, ME-Mise Liquid, SO-Soil, SD-Scilment, SE-Studge Protection, Analysis Exquested Analysis expensed for \$2508, 601087470A) and number of containers provided for each (i.e. \$2508 + 3 - 501087470A) and number of containers provided for each (i.e. \$2508 + 3 - 501087470A).  Figure 10. We want to be supported in the same of the supported for each (i.e. \$2508 + 3 - 501087470A).	Characteristic Hazards
Page:	$\alpha = 1.0$	Address 172 & Layer B. Californed By. JED ALD	Sample ID 8 5 1 N - 2 8 5 1 N - 2	1832 N 1832 SW 1832 SW 1832 SE	2-88	Reimplushed By (Ngrod) Duc	Chair of Custody Namber - Chera Descriptor, T.C. Copter, N. Perrod Service Transcriptor, Name of the Control of	Final Filtered, For legand controls, indicate with Andrew Ends DW-Draining Weiter, GW-Groun Weiter, GW-Groun Weiter, GW-Groun Weiter, GW-Groun Weiter, GW-Groun Weiter, GW-Groun Weiter, Weiter Weite	Reference of the Second of the

## SAMPLE RECEIPT & REVIEW FORM

Client: SCES	DAMI DE RECEIT & REVIEW FORM
Chem: 3023	SDG/AR/COC/Work Order: 15200 459266
Received By: ZKW	Date Received: 9/11/18 49 9/17
Carrier and Tracking Number	Circle Applicable: FeeEx Express FedEx Ground UPS Field Services Courier Other  7327 1332 2560
Suspected Hazard Information	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
	Hazard Class Shipped: UN#:
COC/Samples marked or classified as radioactive?	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): CPM mR/Hr Classified as: Rad 1 Rad 2 Rad 3
Is package, COC, and/or Samples marked HAZ?	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:
Sample Receipt Criteria	Comments/Qualifiers (Required for Non-Conforming Items)
Shipping containers received intact and sealed?	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
Chain of custody documents included with shipment?	V CofC Created upon arrival
3 Samples requiring cold preservation within $(0 \le 6 \text{ deg. C})$ ?*	Preservation Method: Wet Ice Color Dry ice None Other: *all temperatures are recorded in Celsius  TEMP: 2
4 Daily check performed and passed on IR temperature gun?	Temperature Device Serial #: IR3-18 Secondary Temperature Device Serial # (If Applicable):
5 Sample containers intact and sealed?	☆ Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?	Sample ID's and Containers Affected:  If Preservation added, Lot#:
7 Do any samples require Volatile Analysis?	If Yes, Are Encores or Soil Kits present? YesNo (If yes, take to VOA Freezer)  Do VOA vials contain acid preservation? YesNo N/A (If unknown, select No)  VOA vials free of headspace? Yes No N/A  Sample ID's and containers affected:
8 Samples received within holding time?	ID's and tests affected:
9 Sample ID's on COC match ID's on bottles?	Sample ID's and containers affected:
Date & time on COC match date & time on bottles?	Sample ID's affected:
Number of containers received match number indicated on COC?	Sample ID's affected:
12 Are sample containers identifiable as GEL provided?	
COC form is properly signed in relinquished/received sections?	
Comments (Use Continuation Form if needed):	
PM (or PMA) review: Initial	KG Date 9/17/18 Page of

Page 18 of 19

GL-CHL-SR-001 Rev 5

List of current GEL Certifications as of 19 September 2018

State	Certification
Alaska	17–018
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA180011
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122018-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-18-13
Utah NELAP	SC000122018-26
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
	I.



a member of The GEL Group INC







PO Box 30712 Charleston, SC 29417 2040 Savage Road Charleston, SC 29407 P 843.556.8171 F 843.766.1178

gel.com

June 26, 2019

Michael W. McLaughlin SCS Engineers 11260 Roger Bacon Drive Suite 300 Reston, Virginia 20190

Re: Routine Analysis Work Order: 481971

Dear Michael McLaughlin:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on June 14, 2019. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at www.gel.com.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4778.

Sincerely,

Taylor Cannon for Hope Taylor Project Manager

Purchase Order: xxx

Enclosures

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

# Certificate of Analysis Report for

SCES001 SCS Engineers

Client SDG: 481971 GEL Work Order: 481971

## The Qualifiers in this report are defined as follows:

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a Tracer compound
- \*\* Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the Certificate of Analysis.

The designation ND, if present, appears in the result column when the analyte concentration is not detected above the limit as defined in the 'U' qualifier above.

This data report has been prepared and reviewed in accordance with GEL Laboratories LLC standard operating procedures. Please direct any questions to your Project Manager, Hope Taylor.

	78(10G)	
Reviewed by		

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

SRA1-1 481971001

Matrix:

Soil

Collect Date:

Client Sample ID:

07-JUN-19 11:30

Receive Date: Collector:

14-JUN-19 Client

Moisture:

28.9%

	Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method
--	-----------	-----------	--------	----	----	-------	----	-----------------	-------------------

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

0.689

2.76

Analyst

BXG2

ug/kg

Date

06/18/19

Project:

Client ID:

9.80 1 CWW 06/21/19 0028 1887753

Time

1300

**Analyst Comments** 

Prep Batch

1887746

SCES00118

SCES001

The following Prep Methods were performed:

Method Description SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

U

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA1-2 481971002

Matrix:

Soil

Collect Date:

07-JUN-19 11:45

Receive Date:

14-JUN-19

Collector:

Client

Moisture:

30.6%

U

Description

|--|

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

Method

0.713 2.85

Analyst

BXG2

ug/kg

Date

06/18/19

Project:

Client ID:

9.90 1 CWW 06/21/19 0056 1887753

Time

1300

**Analyst Comments** 

Prep Batch

1887746

SCES00118

SCES001

The following Prep Methods were performed:

SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

Method	Description

SW846 6850 Modified

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Client Sample ID:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

SRA1-3 481971003

Matrix:

Soil

Collect Date:

07-JUN-19 12:00

Receive Date:

14-JUN-19

Collector: Moisture: Client 34.2%

Qualifier DL RL PF Result Units DF Analyst Date Time Batch Method

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

Parameter

EPA 6850 Perchlorate Extraction Solids

0.748

2.99

ug/kg

Project:

Client ID:

9.85 1 CWW 06/21/19 0105 1887753

SCES00118

SCES001

The following Prep Methods were performed:

Method SW846 6850 Modified

Analyst BXG2

Date 06/18/19 Time 1300

Prep Batch

1887746

The following Analytical Methods were performed:

Method

Description SW846 6850 Modified

Description

**Analyst Comments** 

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit MDA: Minimum Detectable Activity

PF: Prep Factor RL: Reporting Limit

MDC: Minimum Detectable Concentration

SQL: Sample Quantitation Limit

Page 5 of 58 SDG: 481971

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA1-4 481971004

Matrix:

Soil

Collect Date: Receive Date: 07-JUN-19 12:15

Collector:

14-JUN-19 Client

Moisture:

19.2%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

Method

0.616

2.46

Analyst

BXG2

ug/kg

Date

06/18/19

Time

1300

**Analyst Comments** 

Project:

Client ID:

9.95 1 CWW 06/21/19 0115 1887753

1887746

Prep Batch

SCES00118

SCES001

The following Prep Methods were performed:

SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

Description

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

U

**Notes:** 

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA1-5 481971005

Matrix:

Soil

Collect Date:

07-JUN-19 12:30

Receive Date: Collector:

14-JUN-19 Client

Moisture:

10.5%

	Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method
--	-----------	-----------	--------	----	----	-------	----	-----------------	-------------------

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

0.553

2.21

Analyst

BXG2

ug/kg

Date

06/18/19

Project:

Client ID:

9.90 1 CWW 06/21/19 0124 1887753

Time

1300

**Analyst Comments** 

Prep Batch

1887746

SCES00118

SCES001

The following Prep Methods were performed:

Method Description SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

U

**Notes:** 

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA1-6

481971006

Matrix:

Soil

Collect Date:

07-JUN-19 12:30

Receive Date: Collector:

14-JUN-19 Client

Moisture:

29.6%

U

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method	1
									_

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

0.700

2.80

ug/kg

9.85 1 CWW 06/21/19 0202 1887753

SCES00118

SCES001

The following Prep Methods were performed:

Method Description SW846 6850 Modified

EPA 6850 Perchlorate Extraction Solids

Analyst BXG2

Date 06/18/19

Project:

Client ID:

Prep Batch Time 1300 1887746

The following Analytical Methods were performed:

Method

Description

**Analyst Comments** 

SW846 6850 Modified

## **Notes:**

Column headers are defined as follows:

DF: Dilution Factor DL: Detection Limit MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit

Page 8 of 58 SDG: 481971

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA1-7

481971007

Matrix:

Soil

Collect Date:

07-JUN-19 12:45

Receive Date:

14-JUN-19

Collector: Moisture: Client

26.6%

U

|--|

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

0.668

2.67

ug/kg

9.80 1 CWW 06/21/19 0212 1887753

SCES00118

SCES001

The following Prep Methods were performed:

Method Description SW846 6850 Modified

EPA 6850 Perchlorate Extraction Solids

Analyst BXG2

Date 06/18/19

Project:

Client ID:

Prep Batch Time 1300 1887746

**Analyst Comments** 

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

Client Sample ID:

SRA1-8 481971008

Matrix:

Soil

Collect Date:

07-JUN-19 13:00

Receive Date:

14-JUN-19

Collector:

Client

Moisture:

25.1%

|--|

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

Method

0.664

2.66

Analyst

BXG2

ug/kg

Date

06/18/19

Project:

Client ID:

9.95 1 CWW 06/21/19 0221 1887753

Time

1300

**Analyst Comments** 

Prep Batch

1887746

SCES00118

SCES001

The following Prep Methods were performed:

Description SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

U

**Notes:** 

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 10 of 58 SDG: 481971

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

SRA1-9 481971009

Matrix:

Soil

Collect Date:

Client Sample ID:

10-JUN-19 08:30

Result

EPA 6850 Perchlorate Extraction Solids

Receive Date:

14-JUN-19

Collector:

Client

Moisture:

25%

DL

Units

PF

Project:

Client ID:

DF Analyst Date

SCES00118

SCES001

Time Batch Method

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Qualifier

Perchlorate

Parameter

0.660

2.64

RL

ug/kg

9.90 1 CWW 06/21/19 0231 1887753

The following Prep Methods were performed:

Method SW846 6850 Modified

Analyst

BXG2

Date 06/18/19 Time

**Analyst Comments** 

Prep Batch

The following Analytical Methods were performed:

Method

Description

Description

1300

1887746

SW846 6850 Modified

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor DL: Detection Limit MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level PF: Prep Factor

RL: Reporting Limit

SQL: Sample Quantitation Limit

Page 11 of 58 SDG: 481971

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA1-10 481971010

Matrix:

Soil

Collect Date:

10-JUN-19 09:00

Receive Date:

14-JUN-19

Collector:

Client

Moisture:

30.6%

U

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

0.710

2.84

ug/kg

9.85 1 CWW 06/21/19 0240 1887753

The following Prep Methods were performed:

Method Description SW846 6850 Modified

EPA 6850 Perchlorate Extraction Solids

Analyst BXG2

Date 06/18/19

Project:

Client ID:

Time 1300

1887746

Prep Batch

SCES00118

SCES001

The following Analytical Methods were performed:

Method

Description

SW846 6850 Modified

**Analyst Comments** 

**Notes:** 

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 12 of 58 SDG: 481971

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

SCS Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

SRA1-11 481971011

Matrix:

Soil

Collect Date:

10-JUN-19 09:30

Receive Date:

14-JUN-19

Collector:

Client 29%

Moisture:

Client Sample ID:

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method
-----------	-----------	--------	----	----	-------	----	-----------------	-------------------

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

Method

1.6

0.683

Analyst

BXG2

2.73

ug/kg

Date

06/18/19

Project:

Client ID:

9.71 1 CWW 06/21/19 0250 1887753

Time

1300

**Analyst Comments** 

Prep Batch

1887746

SCES00118

SCES001

87753

The following Prep Methods were performed:

SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

Description

**Notes:** 

Column headers are defined as follows:

DF: Dilution Factor
DL: Detection Limit
MDA: Minimum Detectable Activity

Lc/LC: Critical Level PF: Prep Factor RL: Reporting Limit

MDC: Minimum Detectable Concentration

SQL: Sample Quantitation Limit

Page 13 of 58 SDG: 481971

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

Client Sample ID:

SRA1-12 481971012

Matrix:

Soil

Collect Date:

10-JUN-19 10:00

Receive Date:

14-JUN-19

Collector:

Client

Moisture:

14.4%

|--|

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Description

Perchlorate

Method

0.581

2.33

Analyst

BXG2

ug/kg

Date

06/18/19

Project:

Client ID:

9.95 1 CWW 06/21/19 0259 1887753

Prep Batch

1887746

SCES00118

SCES001

The following Prep Methods were performed:

SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

Method Description SW846 6850 Modified **Analyst Comments** 

Time

1300

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor DL: Detection Limit MDA: Minimum Detectable Activity Lc/LC: Critical Level PF: Prep Factor RL: Reporting Limit

MDC: Minimum Detectable Concentration

SQL: Sample Quantitation Limit

Page 14 of 58 SDG: 481971

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: June 26, 2019

Time Batch Method

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

SRA1-13 481971013

Matrix:

Soil

Collect Date:

Client Sample ID:

10-JUN-19 10:30

Result

Receive Date:

14-JUN-19

Collector: Moisture: Client 16.5%

Qualifier

Description

Pa	aı	ne	te	r				

LC-MS/MS Perchlorate

Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Method

0.584 2.34 ug/kg 9.76 1 CWW 06/21/19 0308 1887753

Units

Project:

Client ID:

PF

**Analyst Comments** 

SCES00118

SCES001

DF Analyst Date

The following Prep Methods were performed:

SW846 6850 Modified

Date Prep Batch Analyst Time EPA 6850 Perchlorate Extraction Solids BXG2 06/18/19 1300 1887746

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

**Notes:** 

Column headers are defined as follows:

DF: Dilution Factor DL: Detection Limit MDA: Minimum Detectable Activity Lc/LC: Critical Level PF: Prep Factor RL: Reporting Limit

MDC: Minimum Detectable Concentration

SQL: Sample Quantitation Limit

DL

RL

Page 15 of 58 SDG: 481971

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

SRA1-14 481971014

Matrix:

Soil

Collect Date:

Client Sample ID:

10-JUN-19 11:00

Receive Date: Collector:

14-JUN-19 Client

Moisture:

15.9%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

Method

0.580

2.32

Analyst

BXG2

ug/kg

Date

06/18/19

Project:

Client ID:

9.76 1 CWW 06/21/19 0318 1887753

Prep Batch

1887746

SCES00118

SCES001

The following Prep Methods were performed:

SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

Description

Method Description **Analyst Comments** 

Time

1300

SW846 6850 Modified

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 16 of 58 SDG: 481971

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA2-15 481971015

Matrix:

Soil

Collect Date:

10-JUN-19 11:00

Receive Date: Collector:

14-JUN-19 Client

Moisture:

14.9%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

2.33

ug/kg

Project:

Client ID:

9.90 1 CWW 06/21/19 0327 1887753

SCES00118

SCES001

0.582 U The following Prep Methods were performed:

Method SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

Analyst BXG2

Date 06/18/19 Time 1300

Prep Batch

1887746

The following Analytical Methods were performed:

Method

SW846 6850 Modified

Description

Description

**Analyst Comments** 

**Notes:** 

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA2-16 481971016

Matrix:

Soil

Collect Date:

10-JUN-19 11:30

Receive Date:

14-JUN-19

Collector: Moisture: Client 38.8%

Qualifier DL RL PF Result Units DF Analyst Date Time Batch Method

Project:

Client ID:

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

Parameter

0.797

3.19

ug/kg

9.76 1 CWW 06/21/19 0405 1887753

SCES00118

SCES001

The following Prep Methods were performed:

Method

Analyst BXG2

Date 06/18/19 Time 1300

**Analyst Comments** 

SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

Description

Description

1887746

Prep Batch

Method SW846 6850 Modified

**Notes:** 

Column headers are defined as follows:

DF: Dilution Factor DL: Detection Limit MDA: Minimum Detectable Activity Lc/LC: Critical Level PF: Prep Factor RL: Reporting Limit

MDC: Minimum Detectable Concentration

SQL: Sample Quantitation Limit

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**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

SRA2-17 481971017

Matrix:

Soil

Collect Date:

Client Sample ID:

10-JUN-19 12:00

Receive Date:

14-JUN-19 Client

Collector: Moisture:

23.6%

U

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method	1
									_

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

Method

**Notes:** 

0.639

2.55

Analyst

BXG2

ug/kg

Date

06/18/19

Project:

Client ID:

9.76 1 CWW 06/21/19 0415 1887753

Time

1300

**Analyst Comments** 

Prep Batch

1887746

SCES00118

SCES001

The following Prep Methods were performed:

Description SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA3-18 481971018

Matrix:

Soil

Collect Date:

11-JUN-19 09:00

Receive Date:

14-JUN-19 Client

Collector: Moisture:

29.6%

	Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method
--	-----------	-----------	--------	----	----	-------	----	-----------------	-------------------

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

0.696

2.78

ug/kg

Project:

Client ID:

9.80 1 CWW 06/21/19 0424 1887753

SCES00118

SCES001

The following Prep Methods were performed:

Method Description SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

U

Analyst BXG2

Date 06/18/19 Time 1300

**Analyst Comments** 

Prep Batch

1887746

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

Client Sample ID:

SRA3-19 481971019

Matrix:

Soil

Collect Date:

11-JUN-19 09:30

Receive Date:

14-JUN-19

Collector:

Client

Moisture:

30.1%

U

Talameter Quantity Result DE NE Onto 11 Di Analyst Date Time Batch Method	Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Meth	ıod
---	-----------	-----------	--------	----	----	-------	----	-----------------	-----------------	-----

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

0.704

2.82

Analyst

BXG2

ug/kg

Date

06/18/19

Project:

Client ID:

9.85 1 CWW 06/21/19 0434 1887753

Time

1300

**Analyst Comments** 

Prep Batch

1887746

SCES00118

SCES001

The following Prep Methods were performed:

Method Description

SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

Method	Description

SW846 6850 Modified

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

SRA3-20 481971020

Matrix:

Soil

Collect Date:

Client Sample ID:

11-JUN-19 10:00

Receive Date: Collector:

14-JUN-19 Client

Moisture:

29.3%

U

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

Method

0.697

2.79

Analyst

BXG2

ug/kg

Date

06/18/19

Project:

Client ID:

Time

1300

**Analyst Comments** 

SCES00118

SCES001

9.85 1 CWW 06/21/19 0443 1887753

Prep Batch

1887746

The following Prep Methods were performed:

Description SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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Report Date: June 26, 2019

Company:

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Address:

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Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

SRA3-21 481971021

Matrix:

Soil

Collect Date:

Client Sample ID:

11-JUN-19 10:30

Receive Date: Collector:

14-JUN-19 Client

Moisture:

30.2%

U

	Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method
--	-----------	-----------	--------	----	----	-------	----	-----------------	-------------------

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

0.682

2.73

Analyst

BXG2

ug/kg

Date

06/18/19

Project:

Client ID:

9.52 1 CWW 06/19/19 0121 1887765

Time

1802

**Analyst Comments** 

Prep Batch

1887764

SCES00118

SCES001

The following Prep Methods were performed:

Method Description SW846 6850 Modified

EPA 6850 Perchlorate Extraction Solids The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

**Notes:** 

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

RL: Reporting Limit SQL: Sample Quantitation Limit

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Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

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Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

SRA6-22 481971022

Matrix:

Soil

Collect Date:

Client Sample ID:

11-JUN-19 11:00

Receive Date:

14-JUN-19

Collector:

Client 15.4%

Moisture:

	Parameter Quali		Result	DL	RL	Units	PF	DF Analyst Date	Time Batch	Method
--	-----------------	--	--------	----	----	-------	----	-----------------	------------	--------

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

Method

0.569

Analyst

BXG2

2.27

ug/kg

Date

06/18/19

Project:

Client ID:

9.62 1 CWW 06/19/19 0150 1887765

Time

1802

**Analyst Comments** 

Prep Batch

1887764

SCES00118

SCES001

The following Prep Methods were performed:

SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

U

Description

**Notes:** 

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

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Address:

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Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA6-23 481971023

Matrix:

Soil

Collect Date:

11-JUN-19 12:00

Receive Date:

14-JUN-19

Collector:

Client

Moisture:

15.2%

|--|

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

0.561

2.24

Analyst

BXG2

ug/kg

Date

06/18/19

Project:

Client ID:

Time

1802

SCES00118

SCES001

9.52 1 CWW 06/19/19 0200 1887765

Prep Batch

1887764

The following Prep Methods were performed:

Method Description

SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

U

**Analyst Comments** 

**Notes:** 

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

SCS Engineers

Address:

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Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA5-24 481971024

Matrix:

Soil

Matrix:

10 11 10

Collect Date: Receive Date: 12-JUN-19 09:00

Collector:

14-JUN-19 Client

Moisture:

25.9%

U

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

Method

N

0.637

2.55

Analyst

BXG2

ug/kg

Date

06/18/19

Project:

Client ID:

9.43 1 CWW 06/19/19 0210 1887765

Time

1802

**Analyst Comments** 

Prep Batch

1887764

SCES00118

SCES001

765

The following Prep Methods were performed:

SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

Description

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

**Notes:** 

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
DL: Detection Limit PF: Prep Factor
MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA5-25 481971025

Matrix:

Soil

Collect Date:

12-JUN-19 09:30

Receive Date: Collector:

14-JUN-19 Client

Moisture:

22.7%

Parameter — Ouanner Result — DL RL Units Pr Dr Analyst Date Time Batch Method				DL			PF		
---	--	--	--	----	--	--	----	--	--

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

0.644

2.58

Analyst

BXG2

ug/kg

Date

06/18/19

Project:

Client ID:

9.95 1 CWW 06/19/19 0220 1887765

Time

1802

**Analyst Comments** 

Prep Batch

1887764

SCES00118

SCES001

The following Prep Methods were performed:

Method Description SW846 6850 Modified

EPA 6850 Perchlorate Extraction Solids The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

U

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA5-26 481971026

Matrix:

Soil

Collect Date:

12-JUN-19 10:00

Receive Date: Collector:

14-JUN-19 Client

Moisture:

13.1%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method	1
									_

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

0.564

0.553

2.21

ug/kg

Date

06/18/19

Project:

Client ID:

9.62 1 CWW 06/19/19 0300 1887765

Time

1802

**Analyst Comments** 

Prep Batch

1887764

SCES00118

SCES001

The following Prep Methods were performed:

Method Description Analyst SW846 6850 Modified BXG2

EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed: Method Description

SW846 6850 Modified

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

SRA5-27 481971027

Matrix:

Soil

Collect Date:

Client Sample ID:

12-JUN-19 10:30

Receive Date:

14-JUN-19

Collector:

Client

Moisture: 15.5%

	Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method
--	-----------	-----------	--------	----	----	-------	----	-----------------	-------------------

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

0.598

0.577

2.31

Analyst

BXG2

ug/kg

Date

06/18/19

Project:

Client ID:

Time

1802

SCES00118

Prep Batch

1887764

SCES001

9.76 1 CWW 06/19/19 0310 1887765

The following Prep Methods were performed:

Method Description SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

SW846 6850 Modified

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

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Address:

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Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA5-28

481971028

Matrix:

Soil

Collect Date:

12-JUN-19 11:00

Receive Date:

14-JUN-19

Collector: Moisture: Client 11.8%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

Method

0.553

2.21

Analyst

BXG2

ug/kg

Date

06/18/19

Project:

Client ID:

9.76 1 CWW 06/19/19 0320 1887765

Time

1802

**Analyst Comments** 

Prep Batch

1887764

SCES00118

SCES001

The following Prep Methods were performed:

Description SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

U

**Notes:** 

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA5-29 481971029

Matrix:

Soil

Collect Date:

12-JUN-19 11:30

Receive Date: Collector:

14-JUN-19

Moisture:

Client 9.6%

Parameter Qualifier Result	DL RL	Units PF	DF Analyst Date	Time Batch Method
----------------------------	-------	----------	-----------------	-------------------

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Description

Perchlorate

Method

0.529

2.12

Analyst

BXG2

ug/kg

Date

06/18/19

Project:

Client ID:

9.57 1 CWW 06/19/19 0330 1887765

Time

1802

Prep Batch

1887764

SCES00118

SCES001

The following Prep Methods were performed:

SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed: Method Description **Analyst Comments** 

SW846 6850 Modified

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

SRA4-30 481971030

Matrix:

Soil

Collect Date:

Client Sample ID:

12-JUN-19 12:00

Receive Date:

14-JUN-19

Collector:

Client

Moisture:

18.5%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch	Method

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

U

0.590

2.36

ug/kg

Project:

Client ID:

9.62 1 CWW 06/19/19 0340 1887765

SCES00118

SCES001

The following Prep Methods were performed:

Method Description SW846 6850 Modified

EPA 6850 Perchlorate Extraction Solids

Date Analyst BXG2 06/18/19 Time 1802

Prep Batch

1887764

The following Analytical Methods were performed:

Method

Description

SW846 6850 Modified

**Analyst Comments** 

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA4-31 481971031

Matrix:

Soil

Collect Date:

12-JUN-19 12:30

Receive Date:

14-JUN-19

Collector: Moisture: Client 17.3%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

Method

0.579

2.31

Analyst

BXG2

ug/kg

Date

06/18/19

Project:

Client ID:

9.57 1 CWW 06/19/19 0350 1887765

Time

1802

**Analyst Comments** 

Prep Batch

1887764

SCES00118

SCES001

The following Prep Methods were performed:

SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

Description

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

U

**Notes:** 

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA4-32 481971032

Matrix:

Soil

Collect Date:

Receive Date:

12-JUN-19 13:00 14-JUN-19

Collector:

Client

Moisture:

7.29%

	Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method
--	-----------	-----------	--------	----	----	-------	----	-----------------	-------------------

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

0.531

2.13

Analyst

ug/kg

Date

Project:

Client ID:

9.85 1 CWW 06/19/19 0400 1887765

Time

**Analyst Comments** 

Prep Batch

SCES00118

SCES001

The following Prep Methods were performed:

Method Description

SW846 6850 Modified	EPA 6850 Perchlorate Extraction Solids	BXG2	06/18/19	1802	1887764

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Page 34 of 58 SDG: 481971

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Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA4-33

481971033

Matrix:

Soil

Collect Date:

12-JUN-19 13:30

Receive Date:

14-JUN-19

Collector:

Client

Moisture:

25.4%

U

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

0.654

2.62

Project:

Client ID:

9.76 1 CWW 06/19/19 0410 1887765

Prep Batch

1887764

SCES00118

SCES001

The following Prep Methods were performed:

Method Description SW846 6850 Modified

EPA 6850 Perchlorate Extraction Solids

Analyst BXG2

Date 06/18/19

ug/kg

Time 1802

The following Analytical Methods were performed:

Method

Description SW846 6850 Modified **Analyst Comments** 

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA8-34 481971034

Matrix:

Soil

Collect Date:

13-JUN-19 10:30

Receive Date: Collector:

14-JUN-19 Client

Moisture:

17.1%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

0.589

2.35

Analyst

BXG2

ug/kg

Date

06/18/19

Project:

Client ID:

9.76 1 CWW 06/19/19 0420 1887765

Time

1802

**Analyst Comments** 

Prep Batch

1887764

SCES00118

SCES001

The following Prep Methods were performed:

Method Description

SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids The following Analytical Methods were performed:

The following A	Anaryticai Methous	were periorine
Method	Description	n

SW846 6850 Modified

U

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

Client Sample ID:

SRA8-35 481971035

Matrix:

Soil

Collect Date:

13-JUN-19 11:00

Receive Date:

14-JUN-19 Client

Collector: Moisture:

23.1%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

Method

U

0.632

2.53

Analyst

BXG2

ug/kg

Date

06/18/19

Project:

Client ID:

9.71 1 CWW 06/19/19 0430 1887765

Prep Batch

1887764

SCES00118

SCES001

The following Prep Methods were performed:

SW846 6850 Modified EF	A 6850 Perchlorate Extraction Solids

Description

The following Analytical Methods were performed:

Method Description SW846 6850 Modified

**Analyst Comments** 

Time

1802

**Notes:** 

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA8-36 481971036

Matrix:

Soil

Collect Date:

13-JUN-19 11:45

Receive Date: Collector:

14-JUN-19 Client

Moisture:

24.6%

	Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method
--	-----------	-----------	--------	----	----	-------	----	-----------------	-------------------

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

0.628

2.51

ug/kg

9.48 1 CWW 06/19/19 0509 1887765

SCES00118

SCES001

The following Prep Methods were performed:

Method Description SW846 6850 Modified

EPA 6850 Perchlorate Extraction Solids

U

Analyst BXG2

Date 06/18/19

Project:

Client ID:

Prep Batch Time 1802 1887764

The following Analytical Methods were performed:

Method

Description

**Analyst Comments** 

SW846 6850 Modified

## **Notes:**

Column headers are defined as follows:

DF: Dilution Factor DL: Detection Limit MDA: Minimum Detectable Activity

MDC: Minimum Detectable Concentration

Lc/LC: Critical Level

PF: Prep Factor RL: Reporting Limit

SQL: Sample Quantitation Limit

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**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA8-37

481971037

Matrix:

Soil

Collect Date:

13-JUN-19 11:30

Result

Receive Date: Collector:

14-JUN-19

Moisture:

Client 24.7%

C-MS/MS	Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Qualifier

Perchlorate

Parameter

0.660

DL

2.64

RL

ug/kg

Units

Project:

Client ID:

PF

1802

9.95 1 CWW 06/19/19 0519 1887765

Time Batch Method

The following Prep Methods were performed:

Method SW846 6850 Modified Description EPA 6850 Perchlorate Extraction Solids Analyst

BXG2

Date 06/18/19 Time

Prep Batch

1887764

SCES00118

SCES001

DF Analyst Date

The following Analytical Methods were performed:

Method

**Notes:** 

Description

SW846 6850 Modified

**Analyst Comments** 

Column headers are defined as follows:

DF: Dilution Factor DL: Detection Limit

MDA: Minimum Detectable Activity MDC: Minimum Detectable Concentration Lc/LC: Critical Level

PF: Prep Factor RL: Reporting Limit

SQL: Sample Quantitation Limit

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2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA8-38

481971038

Matrix:

Soil

Collect Date:

13-JUN-19 12:00

Receive Date: Collector:

14-JUN-19

Moisture:

Client 22%

	Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method
--	-----------	-----------	--------	----	----	-------	----	-----------------	-------------------

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

Method

0.616

2.46

Analyst

BXG2

ug/kg

Date

06/18/19

Project:

Client ID:

9.62 1 CWW 06/19/19 0529 1887765

Time

1802

**Analyst Comments** 

SCES00118

Prep Batch

1887764

SCES001

The following Prep Methods were performed:

Description SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

U

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

Client Sample ID:

SRA10-39 481971039

Matrix:

Soil

Collect Date:

13-JUN-19 13:00

Receive Date: Collector:

14-JUN-19

Moisture:

Client 21.9%

	Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method
--	-----------	-----------	--------	----	----	-------	----	-----------------	-------------------

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

0.698

0.607

2.43

Analyst

ug/kg

Date

06/18/19

Project:

Client ID:

9.48 1 CWW 06/19/19 0539 1887765

Time

1802

**Analyst Comments** 

Prep Batch

1887764

SCES00118

SCES001

The following Prep Methods were performed:

Method Description SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

BXG2 The following Analytical Methods were performed:

Method Description

SW846 6850 Modified

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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Certificate of Analysis

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Client Sample ID: Sample ID:

SRA10-40 481971040

Matrix:

Soil

Collect Date:

13-JUN-19 12:15

Receive Date:

14-JUN-19

Collector:

Client 16.1%

Moisture:

Qualifier DL RL PF

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

Parameter

Result

0.584

2.34

ug/kg

Units

9.80 1 CWW 06/19/19 0549 1887765

The following Prep Methods were performed:

Method SW846 6850 Modified

EPA 6850 Perchlorate Extraction Solids

Analyst

BXG2

Date 06/18/19

Project:

Client ID:

Time 1802

Prep Batch

Time Batch Method

The following Analytical Methods were performed:

Method

Description

Description

**Analyst Comments** 

SCES00118

SCES001

DF Analyst Date

1887764

SW846 6850 Modified

#### **Notes:**

Column headers are defined as follows:

DF: Dilution Factor DL: Detection Limit MDA: Minimum Detectable Activity

PF: Prep Factor RL: Reporting Limit

Lc/LC: Critical Level

MDC: Minimum Detectable Concentration

SQL: Sample Quantitation Limit

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**Certificate of Analysis** 

Report Date: June 26, 2019

Company:

**SCS** Engineers

Address:

11260 Roger Bacon Drive

Suite 300

Reston, Virginia 20190

Contact:

Michael W. McLaughlin

Project:

Routine Analysis

Sample ID:

Client Sample ID:

SRA10-41

481971041

Matrix:

Soil

Collect Date:

13-JUN-19 12:30

Receive Date: Collector:

14-JUN-19 Client

Moisture:

15.3%

U

Description

Parameter	Qualifier	Result	DL	RL	Units	PF	DF Analyst Date	Time Batch Method

LC-MS/MS Perchlorate

Perchlorate by LC-MS/MS "Dry Weight Corrected"

Perchlorate

Method

0.570

2.28

BXG2

Analyst

ug/kg

Date

06/18/19

Project:

Client ID:

9.66 1 CWW 06/19/19 0659 1887788

Prep Batch

1887787

SCES00118

SCES001

The following Prep Methods were performed:

SW846 6850 Modified EPA 6850 Perchlorate Extraction Solids

The following Analytical Methods were performed: Method Description

SW846 6850 Modified

**Analyst Comments** 

Time

1319

**Notes:** 

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level DL: Detection Limit PF: Prep Factor MDA: Minimum Detectable Activity RL: Reporting Limit

MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

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**QC Summary** 

Report Date: June 26, 2019

Page 1 of 3

**SCS Engineers** 

11260 Roger Bacon Drive

Suite 300

Reston, Virginia

Michael W. McLaughlin

Workorder: 481971

**Contact:** 

Parmname	NOM	Sample Qual	QC	Units	RPD%	REC%	Range A	Anlst	Date Time
LC-MS/MS Perchlorate Batch 1887753									
QC1204310508 ICS Perchlorate	1.97		2.01	ug/kg		102	(70%-130%)	CWW	06/21/19 00:18
QC1204310509 LCS Perchlorate	1.95	J	1.94	ug/kg		100	(70%-130%)		06/21/19 00:09
QC1204310507 MB Perchlorate		U	ND	ug/kg					06/20/19 23:59
QC1204310510 481971001 MS Perchlorate	2.77 U	ND	2.97	ug/kg		100	(75%-125%)		06/21/19 00:37
QC1204310511 481971001 MSD Perchlorate	2.74 U	ND	2.85	ug/kg	4	96	(0%-30%)		06/21/19 00:47
Batch 1887765 ———									
QC1204310536 ICS Perchlorate	1.92	J	1.90	ug/kg		99	(70%-130%)	CWW	06/19/19 01:11
QC1204310537 LCS Perchlorate	2.00	J	1.95	ug/kg		97	(70%-130%)		06/19/19 01:01
QC1204310535 MB Perchlorate		U	ND	ug/kg					06/19/19 00:51
QC1204310538 481971021 MS Perchlorate	2.78 U	NDJ	2.64	ug/kg		95	(75%-125%)		06/19/19 01:31
QC1204310539 481971021 MSD Perchlorate	2.84 U	ND	3.19	ug/kg	19	113	(0%-30%)		06/19/19 01:40

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# **QC Summary**

481971 Page 2 of 3 Anlst **Parmname NOM** Sample Qual QC Units RPD% REC% Range Date Time LC-MS/MS Perchlorate Batch 1887788 OC1204310581 **ICS** 1.94 2.06 106 Perchlorate (70%-130%) CWW 06/19/19 06:49 ug/kg QC1204310582 LCS Perchlorate 1.98 J 1.90 96 (70%-130%)06/19/19 06:39 ug/kg QC1204310580 MB U 06/19/19 06:29 ND Perchlorate ug/kg QC1204310583 481971041 MS Perchlorate NDJ 2.30 U 2.10 91 (75%-125%) 06/19/19 07:09 ug/kg QC1204310584 481971041 MSD 2.36 U NDJ Perchlorate 2.16 3 92 (0%-30%)06/19/19 07:19 ug/kg

#### Notes:

Workorder:

The Qualifiers in this report are defined as follows:

- \*\* Analyte is a Tracer compound
- \*\* Analyte is a surrogate compound
- < Result is less than value reported
- > Result is greater than value reported
- The TIC is a suspected aldol-condensation product Α
- В The target analyte was detected in the associated blank.
- BD Results are either below the MDC or tracer recovery is low
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of the sample
- Ε Concentration of the target analyte exceeds the instrument calibration range
- FA Failed analysis.
- Η Analytical holding time was exceeded
- J Value is estimated
- JNX Non Calibrated Compound
- K Analyte present. Reported value may be biased high. Actual value is expected to be lower.
- L Analyte present. Reported value may be biased low. Actual value is expected to be higher.
- M if above MDC and less than LLD M

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# **QC Summary**

Page 3 of 3

Parmname **NOM** Sample Qual OC Units RPD% REC% Range Anlst Date Time REMP Result > MDC/CL and < RDL M Organics--Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based N

- on nearest internal standard response factor
- N Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor
- N/A RPD or %Recovery limits do not apply.

481971

N1 See case narrative

Workorder:

- ND Analyte concentration is not detected above the detection limit
- NJ Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- P Organics--The concentrations between the primary and confirmation columns/detectors is >40% different. For HPLC, the difference is >70%.
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- R Sample results are rejected
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- UI Gamma Spectroscopy--Uncertain identification
- UJ Compound cannot be extracted
- UJ Gamma Spectroscopy--Uncertain identification
- UL Not considered detected. The associated number is the reported concentration, which may be inaccurate due to a low bias.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Other specific qualifiers were required to properly define the results. Consult case narrative.
- Y QC Samples were not spiked with this compound
- ٨ RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL. Qualifier Not Applicable for Radiochemistry.
- Preparation or preservation holding time was exceeded h

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

- ^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
- \* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

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## Technical Case Narrative SCS Engineers SDG #: 481971

# **Perchlorates by LCMSMS**

<u>Product:</u> Definitive Low Level Perchlorate Analysis Utilizing Liquid Chromatography/Mass Spectrometry/Mass Spectrometry (LC/MS/MS) by EPA Method 6850 Modified (6850M)

**Analytical Method:** SW846 6850 Modified **Analytical Procedure:** GL-OA-E-067 REV# 15 **Analytical Batches:** 1887753 and 1887746

The following samples were analyzed using the above methods and analytical procedure(s).

<b>GEL Sample ID#</b>	Client Sample Identification
481971001	SRA1-1
481971002	SRA1-2
481971003	SRA1-3
481971004	SRA1-4
481971005	SRA1-5
481971006	SRA1-6
481971007	SRA1-7
481971008	SRA1-8
481971009	SRA1-9
481971010	SRA1-10
481971011	SRA1-11
481971012	SRA1-12
481971013	SRA1-13
481971014	SRA1-14
481971015	SRA2-15
481971016	SRA2-16
481971017	SRA2-17
481971018	SRA3-18
481971019	SRA3-19
481971020	SRA3-20
1204310507	Method Blank (MB)
1204310508	Interference Check Sample (ICS)
1204310509	Laboratory Control Sample (LCS)
1204310510	481971001(SRA1-1) Matrix Spike (MS)
1204310511	481971001(SRA1-1) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

### **Data Summary:**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

<u>Product:</u> Definitive Low Level Perchlorate Analysis Utilizing Liquid Chromatography/Mass Spectrometry/Mass Spectrometry (LC/MS/MS) by EPA Method 6850 Modified (6850M)

Analytical Method: SW846 6850 Modified

Analytical Procedure: GL-OA-E-067 REV# 15 Analytical Batches: 1887765 and 1887764

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
481971021	SRA3-21
481971022	SRA6-22
481971023	SRA6-23
481971024	SRA5-24
481971025	SRA5-25
481971026	SRA5-26
481971027	SRA5-27
481971028	SRA5-28
481971029	SRA5-29
481971030	SRA4-30
481971031	SRA4-31
481971032	SRA4-32
481971033	SRA4-33
481971034	SRA8-34
481971035	SRA8-35
481971036	SRA8-36
481971037	SRA8-37
481971038	SRA8-38
481971039	SRA10-39
481971040	SRA10-40
1204310535	Method Blank (MB)
1204310536	Interference Check Sample (ICS)
1204310537	Laboratory Control Sample (LCS)
1204310538	481971021(SRA3-21) Matrix Spike (MS)
1204310539	481971021(SRA3-21) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on a "dry weight" basis.

### **Data Summary:**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

<u>Product:</u> Definitive Low Level Perchlorate Analysis Utilizing Liquid Chromatography/Mass Spectrometry/Mass Spectrometry (LC/MS/MS) by EPA Method 6850 Modified (6850M)

**Analytical Method:** SW846 6850 Modified **Analytical Procedure:** GL-OA-E-067 REV# 15 **Analytical Batches:** 1887788 and 1887787

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
481971041	SRA10-41
1204310580	Method Blank (MB)
1204310581	Interference Check Sample (ICS)
1204310582	Laboratory Control Sample (LCS)
1204310583	481971041(SRA10-41) Matrix Spike (MS)

The samples in this SDG were analyzed on a "dry weight" basis.

### **Data Summary:**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

# **Radiochemistry**

**Product:** Dry Weight

**Analytical Method:** ASTM D 2216 (Modified) **Analytical Procedure:** GL-OA-E-020 REV# 13

**Analytical Batch:** 1887147

The following samples were analyzed using the above methods and analytical procedure(s).

<b>GEL Sample ID#</b>	Client Sample Identification
481971001	SRA1-1
481971002	SRA1-2
481971003	SRA1-3
481971004	SRA1-4
481971005	SRA1-5
481971006	SRA1-6
481971007	SRA1-7
481971008	SRA1-8
481971009	SRA1-9
481971010	SRA1-10
481971011	SRA1-11
481971012	SRA1-12
481971013	SRA1-13
481971014	SRA1-14
481971015	SRA2-15
481971016	SRA2-16
481971017	SRA2-17
481971018	SRA3-18
481971019	SRA3-19
481971020	SRA3-20
1204309138	481971001(SRA1-1) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

# **Data Summary:**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

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**Product:** Dry Weight

Analytical Method: ASTM D 2216 (Modified)
Analytical Procedure: GL-OA-E-020 REV# 13

**Analytical Batch:** 1887148

The following samples were analyzed using the above methods and analytical procedure(s).

<b>GEL Sample ID#</b>	<b>Client Sample Identification</b>
481971021	SRA3-21
481971022	SRA6-22
481971023	SRA6-23
481971024	SRA5-24
481971025	SRA5-25
481971026	SRA5-26
481971027	SRA5-27
481971028	SRA5-28
481971029	SRA5-29
481971030	SRA4-30
481971031	SRA4-31
481971032	SRA4-32
481971033	SRA4-33
481971034	SRA8-34
481971035	SRA8-35
481971036	SRA8-36
481971037	SRA8-37
481971038	SRA8-38
481971039	SRA10-39
481971040	SRA10-40
1204309139	481971021(SRA3-21) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

### **Data Summary:**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

**Product:** Dry Weight

Analytical Method: ASTM D 2216 (Modified) Analytical Procedure: GL-OA-E-020 REV# 13

**Analytical Batch:** 1887149

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
481971041	SRA10-41
1204309140	481971041(SRA10-41) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

## **Data Summary:**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

## **Certification Statement**

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Charleston, SC 29407   Phone: (843) 556-8171   Fax: (843) 766-1178   Fax: (843) 766-11	iners for each test)  Preservative Type (6)  Preservative Type (6)  Comments  Note: extra sample is required for sample specific QC  Specific QC  I:wit <
GEL Project Manager:  GEL Project Manager:  Should this Sample be Sample be Sample to containers and possible Hazards  Solould this Sample be Sample Hazards  April Field Sample be Sample be Sample Analysis Requested (3) Nos. possible Hazards  Time Tay Requested: Normal:	iners for each test)  Preservative Type (6)  Comments  Note: extra sample is required for sample specific QC  specific QC    i.m. + < & 3.7 mg
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Other	Please provide any additional details below regarding handling and/or disposal
(i.e.: High/low pH, asbestos, beryllium, irritants, other misc. health hazards, etc.)  Description:	concerns. (i.e.: Origin of sample(s), type of site collected from, odd matrices, etc.)
Select Deliverable: [ ] Cof A [ ]  Additional Remarks:  For Lab Receiving Use Only: Cuss  For Lab Receiving	equested: Normal: Specify:  [] Yes [] No  rable: [] C of A [] QC Summary [] level 1 [] Leve  emarks:  eiving Use Only: Custody Seal Intact? [] Yes [] No  re Zone: [] Eastern [] Pacific [] Central [] Mou  ge Zone: [] Eastern [] Pacific [] Central [] Mou  Grab, C = Composite  Grab, C = Composite  If no preservative is added = leave field blank  Unknown  w pH, asbestos, beryllium, irritants, other  concerns.  uazards, etc.)  of site col

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PO Number:	GEL Work Order Number.	rr: GEL Project Manager:	Manager:		Fax: (843) 766-1178	
Chient Name:		Phone #	S	Sample Analysis Requested <sup>(5)</sup> (Fill in	(Fill in the number of containers for each test)	for each test)
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ddress:			sample be considered:			
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SRA2-17	51/01/9	1200				
SRA3-18	6/11/9	900				
SRA3-19	6/11/9	656				
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	FL = Flammable/Ignitable CO = Corrosive RE = Reactive	LW= Listed Waste (F.K.P and U-listed wastes.) Waste code(s):	OT= Other/ (i.e.: High/lo misc. health Description:	OT=Other/Unknown (i.e.: High/low pH, asbestos, beryllium, irritants, other misc. health hazards, etc.) Description:		below regarding handling and/or disposal concerns. (i.e.: Origin of sample(s). type of site collected from, odd matrices, etc.)
Cd = Cadmium Ag= Silver Cr = Chromium MR= Misc. RCRA metals	TSCA Regulated PCB = Polychlorinated					
Pb = Lead	biphenyls					

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\ \ \	10000000	GEL Project Manager:	uger:	Fax: (843) 766-1178	
Chient Name:	Phone #		Sample Analysis Requested (5)	(Fill in the number of containers for each test)	rs for each test)
Project/Site Name:	Fax #	3			< Preservative Type (6)
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7.) KNOWN OR POSSIBLE HAZARDS   Charac	Characteristic Hazards   Listed Waste		Other		Please provide any additional details
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Cracker Miss. RCRA metals PCB = Pt 1 and	PCB = Polychlorinated				
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		Phone #				Samp	Sample Analysis Requested <sup>(5)</sup>	Requeste		(Fill in the number of containers for each test)	ber of co	ontainers	for each t	sst)	
Project/Site Name:		Fax#			Should this								< Preser	< Preservative Type (6)	
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7.) KNOWN OR POSSIBLE HAZARDS	Characteristic Hazards	Listed Waste	Listed Waste			Other					Please	e provide (	any additie	Please provide any additional details	2505500
Hg= Mercury Se= Selenium	FL = Frammanterignmante CO = Corrosive RE = Reactive		ted waste id U-listed de(s):	ı waste U-listed wastes.) s):		O1= Other / Unknown (i.e.: Highlow pH, asb misc. health hazards, es Description:	O1= Other / Unknown (i.e.: Hightlow pH, asbestos, beryllium, irritants, other misc. health hazards, etc.) Description:	os, berylliu	n, irritants	, other	below conce of site	regarding rms. (i.e.: collected	g handling Origin of, from, odd	below regarding handling and/or disposal concerns. (i.e.: Origin of sample(s), type of site collected from, odd matrices, etc.)	200
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Got Number (1).		get.com 1 Chemistry   Radiochemistry   Radiobioassay   Specir Chain of Custody and Analytical Request	Chemistry   Radiochemistry   Radiobioassay   Specialty Analytics   Custody and Analytical Request	y i Specialty Analytics <b>cuest</b>	Charleston, SC 29407 Phone: (843) 556-8171	20
	GEL Work Order Number:	GEL Project Manager:	t Manager:		Fax: (843) 766-1178	
Elient Name:	Phone #			Sample Analysis Requested (5) (Fill in	(Fill in the number of containers for each test)	ers for each test)
Paroject/Site Name:	Fax#		\$20 NO.00			< Preservative Type (6)
Address:			sample be considered:			
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Sample ID  * For composites - indicate start and stop date/time	*Time *Date Collected Collected (Military) (mmedd-vv) (hhmm)	cted Cted Sample ary) Code (3) Filtered (3) Marrix (4)	Sadioactive res, please sur sotopic info.) 7) Known or possible Haza	ista numbero		required for sample specific QC
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7.) KNOWN OR POSSIBLE HAZARDS Char	Characteristic Hazards     Lis	Listed Waste	Other			Please provide any additional datails
Hg= Mercury Se= Selenium Ag= Silver	FL = Flammable/Ignitable CO = Corrosive RE = Reactive Wa TSCA Regulated	LW= Listed Waste (F.K.P and U-listed wastes.) Waste code(s):	OT=Other/ (i.e.: High/lo misc. health Description:	OT=Other / Unknown (i.e.: High/low pH, asbestos, beryllium, irritants, other misc. health hazards, etc.) Description:		below regarding handling and/or disposal concerns. (i.e.: Origin of sample(s), type of site collected from, odd matrices, etc.)
CT = CHROIMUM   MINE MISC, NCKA METAIS   PCB   Pb = Lead	= Polychlormated biphenyls					

## SAMPLE RECEIPT & REVIEW FORM

Cli	ent: SCES			SDC	G/AR/COC/Work Order; 481971
Rec	eeived By: ZKW			Dat	e Received: 6/14/19
	Carrier and Tracking Number				Circle Applicable:  GedEx Express FedEx Ground UPS Field Services Courier Other  78.79 6757 93604
Sus	pected Hazard Information	Yes	ŝ	*If?	Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
A)S	hipped as a DOT Hazardous?		V		ard Class Shipped: UN#: N2910, Is the Radioactive Shipment Survey Compliant? YesNo
	Did the client designate the samples are to be ived as radioactive?		4		notation or radioactive stickers on containers equal elient designation
	Did the RSO classify the samples as oactive?		~		sified as: Rad 1 Rad 2 Rad 3
	Oid the client designate samples are ardous?	<u> </u>	~		notation or hazard labels on containers equal client designation or E is yes, select Hazards below.
E) [	Did the RSO identify possible hazards?	<u> </u>	~	PCE	
	Sample Receipt Criteria	Yes	Y.	ž	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	1			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?				Circle Applicable: Client contacted and provided COC COC created upon receipt
3	Samples requiring cold preservation within $(0 \le 6 \text{ deg. C})$ ?*				Preservation Method: (Vet Ice Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP:
4	Daily check performed and passed on IR temperature gun?				Temperature Device Serial #:IR3-18 Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	i			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?		-		Sample ID's and Containers Affected:  If Preservation added, Lot#:
7	Do any samples require Volatile Analysis?				If Yes, are Encores or Soil Kits present for solids? Yes No NA (If yes, take to VOA Freezer)  Do liquid VOA vials contain acid preservation? Yes No NA (If unknown, select No)  Are liquid VOA vials free of headspace? Yes No NA  Sample ID's and containers affected:
8	Samples received within holding time?	-			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?				ID's and containers affected:
10	Date & time on COC match date & time on bottles?	است			Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)
11	Number of containers received match number indicated on COC?	-			Circle Applicable: No container count on COC Other (describe)
12	Are sample containers identifiable as GEL provided?			-/	
13	COC form is properly signed in relinquished/received sections?				Circle Applicable: Not relinquished Other (describe)
Cor	nments (Use Continuation Form if needed):				

Page 57 of 58 SDG: 481971

List of current GEL Certifications as of 26 June 2019

State	Certification
Alaska	17–018
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122019-3
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-19-15
Utah NELAP	SC000122018-27
Vermont	VT87156
Virginia NELAP	460202
Washington	C780